MARCH 1994
Volume 7 Issue 4
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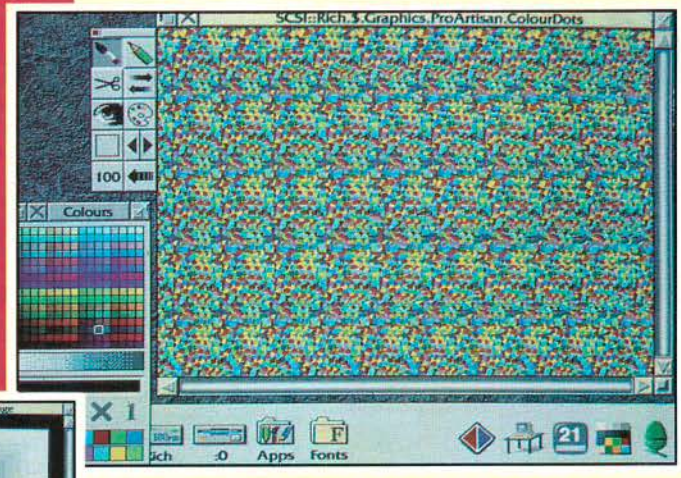
RISC user

The magazine for users of Acorn RISC computers

Dots Before your Eyes: 3D Images



Colour Card Gold

Morphing Packages

BJC-600 Colour Printer Review

MARCH 1994
VOLUME 7 ISSUE 4

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THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

RISC User is published by RISC Developments Limited.

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SOME OF NEXT MONTH'S HIGHLIGHTS

- Spreadsheet Survey
- Weather Satellite Systems
- Games Roundup
- CC's Eagle Card reviewed

It is perhaps a common mistake, not only on the part of users, but many others in Britain, to view Acorn as a company whose horizons are largely limited by the shores of our islands, a company firmly rooted in the UK, but maybe with a few unfulfilled dreams when it comes to the worldwide scale of things. Recently, I have had some opportunity to learn the true extent of Acorn's international activities, and I think it is worth sharing this information more widely.

I am sure many RISC User readers are aware that Archimedes systems are in use in many different countries, but not perhaps the extent of Acorn's own involvement. We also have many overseas readers, and we need to be conscious of their needs in determining the magazine we produce.

So what is happening? Well, Acorn already has well established subsidiaries in Australia and New Zealand. The market in both countries is predominantly an educational one, but there the similarities stop. One significant difference is that Acorn acts much more as a 'one-stop shop' supplying users directly with all their needs, i.e. with third party software and hardware as well as the systems themselves. The common language links, past history and similar factors have always made these countries likely markets for Acorn. The importance attached to these markets is shown by the fact that last July Acorn, with DTI support, organised a two week roadshow visiting first New Zealand and then Australia in company with many of the leading software houses. And very recently, to coincide with BETT, an 'in-bound' mission of some twenty-six key user representatives visited the UK for a two week tour.

Acorn has one other subsidiary, and that is in Germany with offices in Düsseldorf. Acorn Germany was formed only last September, and clearly has much to do to establish itself there as a strong market force in what is potentially both a large and affluent market. To support this, Acorn has produced fully German language versions of RISC OS and all its supporting applications, and an increasing number of British software houses are similarly versioning their products in German. There are many enthusiasts for Acorn in Germany, and a good many highly knowledgeable and competent users. And I think it is fair to say that the German market is also much more demanding in its expectations of both hardware and software.

Now that may not be too startling, but did you know that Acorn's A5000 drives a French made tank training simulator, or that Acorn's biggest success story of 1993 was 70% growth in Hong Kong, based on stock market information systems? Then again, Acorn systems have been used to publish books in Polish, and if you want to see where Acorn dominates special needs education, try Iceland. Other perhaps unexpected countries where Acorn is active include Mexico, Turkey, Colombia, Mauritius and Panama.

Now it is very easy to see all this as so much ephemeral froth, but Acorn has few illusions these days. It certainly doesn't see itself as a worldwide operator on the grand scale; it is more of a niche player, and it is realistic about its chances in overseas markets. But Acorn does have confidence in its product range and what it is doing. It is also prepared to admit that some of its business activities have met with less success than Acorn would wish. But that's life.

It all makes Acorn a more interesting company than many might imagine. If you want a hot tip for 1994, try India. According to Acorn it has more wealthy people than all of western Europe, and with a highly computer literate and technically educated population, India could just be the next 'wunderkind' of the developing world (and Acorn's). 1994 should certainly be an interesting year for all Acorn watchers.

M.C.W.

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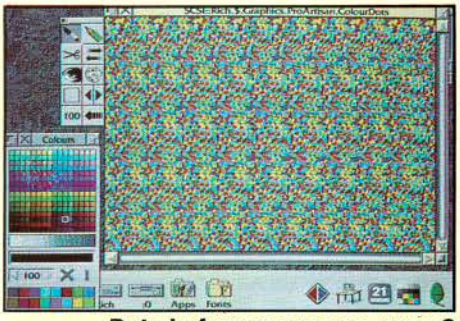

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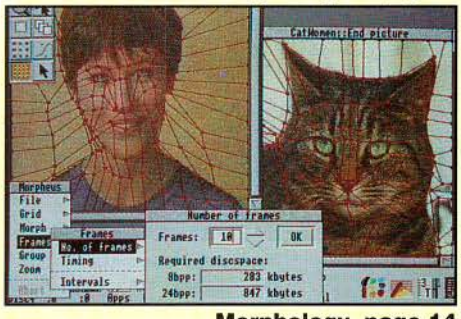

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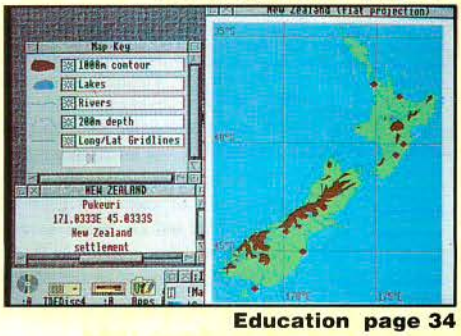

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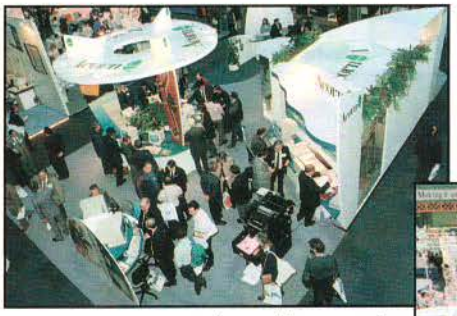
BETT '94



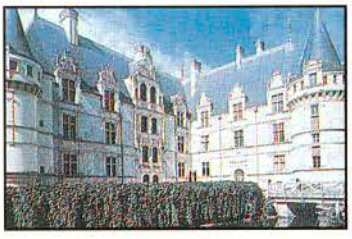
The BETT exhibition, which took place at Olympia from the 12th to the 15th of January, celebrated its tenth anniversary this year. For anyone involved in education and information technology, BETT '94 demonstrated how strong the Acorn platform still is within the educational market, and how committed Acorn and its developers are towards education. Many new products, particularly educational ones, were launched or announced at the show, covering everything from special needs software and hardware to low-cost networking systems. For your diary, BETT '95 will take place from 11th-14th January 1994.

A strong presence from the Acorn community in Australia/New Zealand at BETT '94

THE FAXPACK IS DEAD! LONG LIVE THE FAXPACK

Computer Concepts has announced that it is no longer manufacturing the FaxPack fax card due to a shortage of key components and rising costs. Computer Concepts has sold over 1000 FaxPack's since its launch, and will continue to provide full service and support for existing users. Computer Concepts will, however, produce a further batch of FaxPack cards as soon as it receives firm orders for fifty at a price of £350 ex. VAT. For more information, contact Computer Concepts at Gaddesden Place, Hemel Hempstead, Herts HP2 6EX, tel. 0442 63933, fax 0442 231632.

PICTURE THIS

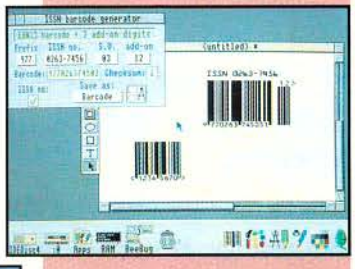


AVP has announced the publication of the first programs in their *PictureBase* series, which provides flexible multimedia resources for the National Curriculum for RISC OS and Windows on the PC. *PictureBase* is a wide ranging and growing series of resources that can include text, graphics, high quality photographic images, sound and video, presented as subject-specific modules in a series of interconnecting interactive windows. There are currently over 90 modules available in the *PictureBase* series, covering numerous areas of the National Curriculum. Modules include *The English Civil Wars*, *The Railways 1750-1900* and *The World Around Us*. For further information and a catalogue of the modules, contact AVP at School Hill Centre, Chepstow, Gwent NP6 5PH, tel. 0291 625439, fax 0291 629671.

THE SOUND OF THE FUTURE

The *Super Sound Expansion System* from Expressive Software Projects is claimed to provide a complete sound solution for the Archimedes. The full width expansion card includes a 16-bit CD quality wave-table synthesiser which provides 128 instrument and 49 percussion MIDI sounds in 4Mb of ROM. These sounds can be played from any MIDI-compatible software, MIDI keyboard or combination of the two. The card can play back 16, 12 and 8-bit sound samples at any frequency up to 60kHz, and also provides direct sound output for Acorn *Replay* films. Input and output sockets on the card include MIDI In, Out and Thru, 2 phono lineout sockets and a 3.5mm jack headphone socket. The *Super Sound Expansion System* costs £299 ex. VAT, and is available from ESP (Hardware), Holly Tree Cottage, Main Street, Strelley Village, Nottingham NG8 6PD, tel. 0602 295019.

BARCODES FOR THE ARC



Kang Software has released a professional barcode designer for the Archimedes. *Barcodes* produces EAN-8 and EAN-13 barcodes in Draw file format. The EAN-13 barcodes can optionally include the two digit and five digit add-on codes used on periodicals (International Standard Serial Numbering), and books (International Standard Book Numbering). The barcode output is to the EAN specification, and has been fully tested using industry standard barcode readers. *Barcodes* is available for £85 from Kell Gatherer, Kang Software, c/o Location Works, 1 Charlotte Street, London W1P 1HD, tel. 071 637 7766, fax 071 637 2727.

MUSIC IN A BOX

A new release from Topologika, *Music Box* is an educational program which helps primary age children investigate rhythm, pitch, harmony and composition. No technical musical knowledge is required to use *Music Box*, but the aim of the program is to develop transferable musical skills. *Music Box* covers much of Attainment Targets 1 and 2 at key stages 1 and 2 of the National Curriculum Music Document, and comes complete with a range of support material in printed form and on disc. The single user price for *Music Box* is £35 ex. VAT. Further information on the package, and site licences, is available from Topologika Software, P.O. Box 39, Stilton, Peterborough, Cambridgeshire PE7 3RL, tel. 0733 244682.

SCANNERS, DIGITISERS & SAMPLERS FROM IRLAM

Hand-held colour scanners, until now only available for the PC and Macintosh, have finally made it to the Archimedes. ImageII is a 24-bit colour scanner, and the first of several new scanners to be launched by Irlam Instruments. A separate 'stitching' utility allows the user to join up an image scanned in strips. ImageII costs £359 ex. VAT and the stitching utility £15 ex. VAT. MovieMaker is Irlam's 16-bit audio and 24-bit video capture system. It can digitise high quality still frames in real time, and record Replay movies and sound samples direct to disc. MovieMaker is priced at £359 ex. VAT. Irlam Instruments can be contacted at Brunel Institute for Bioengineering, Brunel University, Uxbridge, Middlesex UB8 3PH, tel. 0895 811401.

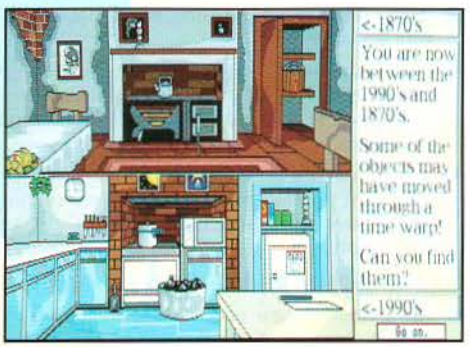
ACORN'S PHOTO-CD RELEASED

Acorn has finally released its Photo-CD access software, enabling users to access photographs which have been developed and stored on CD-ROM. The Photo-CD software is bundled with all Acorn and third party SCSI cards with CDFS version 2.20, and is also available as part of the CDFS 2.20 upgrade kit. For more information, contact your CD-ROM or SCSI card supplier.

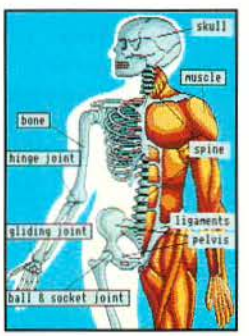
TALKING TREES FROM SHERSTON

Sherston Software has launched three new products for the Archimedes. The *Oxford Reading Tree Stage 2 Talking Stories* are the result of a collaboration between Sherston Software and the Oxford University Press. Featuring the voice of actress Hannah Gordon, each Oxford Reading Tree Talking Story book tells a complete story, and features Alex Brychta's wonderful illustrations complete with amusing animations and sound effects. Children can 'ask' the computer to speak individual words that they can't read for themselves by simply pointing and clicking at them. Alternatively they can click on and listen to a whole sentence, while following the highlighted words on screen. A 'key' word feature is available which allows children to consolidate and increase their familiarity with the key words for each book.

The Oxford Reading Tree Stage 2 Talking Stories is priced at £39.95 ex. VAT for the volume of 6 computer stories, excluding the books themselves which can be purchased separately from either OUP or Sherston Software.


<-1870's
You are now between the 1990's and 1870's.
Some of the objects may have moved through a time warp!
Can you find them?
<-1990's

Time Detectives - The Victorians takes junior school children on an adventure back in time to the period of the Victorians. Written by Simon Hosler, who also wrote the *Crystal Rain Forest*, *Time Detectives - The Victorians* focuses on the changes since the Victorian era in an original and entertaining way, and provides a particularly effective way of studying the Victorians. The package includes a teacher's book full of ideas for use in the classroom, a catalogue of Victorian artefacts together with sets of work and information cards to be used in conjunction with the program. The package is priced at £39.95 ex. VAT.



Sherston's third new product, *Bodywise*, is an animated database of the human body. Suitable for lower secondary aged pupils, *Bodywise* allows the user to explore the human body simply by pointing and clicking at the part they want to know about and watch it work. Clicking on the system required overlays it onto a male or female body together with labels that allow for further exploration. *Bodywise* covers all the major body systems including: the musculo skeletal system, the nervous system, the blood and lymph system, the respiratory system, the digestive system, the excretory system, the endocrine system and reproductive system. *Bodywise* costs £39.95 ex. VAT.

For more information, contact Sherston Software at Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH, tel. 0666 840433, fax 0666 840962.

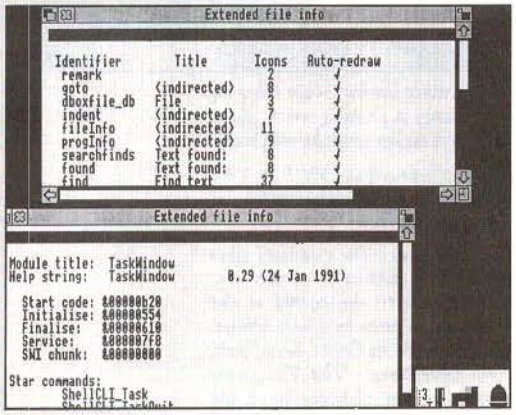
FASTER AND CHEAPER PC CARDS

Aleph One has announced that it will soon be launching a new range of PC cards for the Archimedes. The new cards will use 'clock doubled' Intel 80486 compatible processors running at 40 and 50MHz. The cards will also feature a number of other performance enhancements, including the use of a proprietary single-chip ASIC interface between the card and the host computer, an optional on-board IDE hard disc interface, support for up to 16Mb of on-board memory, and faster serial and parallel ports. For more information contact Aleph One, The Old Courthouse, High Street, Bottisham, Cambridge CB5 9BA, tel. 0223 811679.

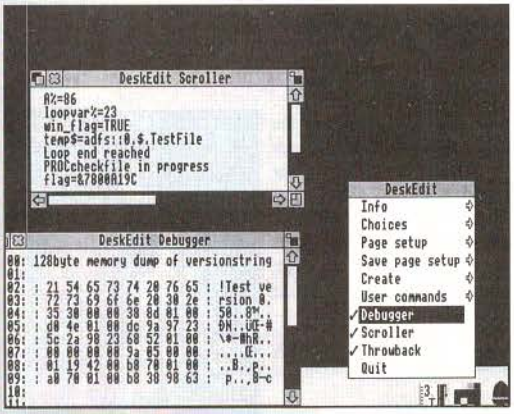
More editing power with . . .

DeskEdit 3

DESKEDIT 3 IS THE SUCCESSOR TO THE POPULAR DESKEDIT 2 PROGRAM AND TEXT EDITOR, AND AT NO INCREASE IN PRICE. DESKEDIT 3 OFFERS EVEN MORE VALUE FOR YOUR MONEY THAN EVER BEFORE. DESKEDIT 3 RETAINS ALL THE FEATURES OF ITS POWERFUL PREDECESSOR, WHILE ADDING MANY MORE.



Extended info on templates, sprites, modules and other files


DeskEdit Scroller
A%=86
loopvar%=23
win_flag=TRUE
temp$=adfs::0.$.TestFile
Loop end reached
PROCcheckfile in progress
flag=&7800A19C
DeskEdit Debugger
00: 128byte memory dump of versionstring
01:
02: : 21 54 65 73 74 20 76 65 : !Test ve
03: : 72 73 69 6f 6e 20 30 2e : rsion 0.
04: : 35 30 00 00 38 8d 01 00 : 50..8...
05: : d0 4e 01 00 dc 9a 97 23 : .N...... #
06: : 5c 2a 98 23 60 52 01 00 : *.#`R..
07: : 00 00 00 00 9a 65 00 00 : .....e..
08: : 01 19 42 00 b8 70 01 00 : ..B..p..
09: : a0 70 01 00 b8 30 98 63 : .p...0.c
10:
11:
DeskEdit
Info
Choices
Page setup
Save page setup
Create
User commands
✓Debugger
✓Scroller
✓Throwback
Quit

The user Scroller and Debugger in action

Brand new features include:

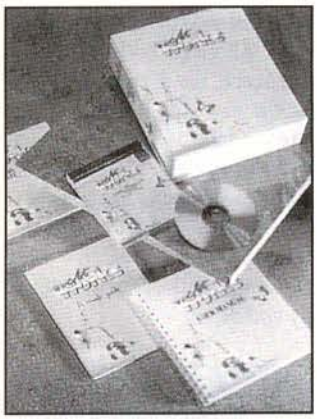
- Complete 20-entry **Desktop debugging** window for use with Basic or C.
- Independent **scrolling window**. Again any text or data can be displayed in this window by using one of the supplied Basic or C functions.
- A new set of **20 invisible markers** are now provided with each window, making it even easier to find your way around your code.
- **New views** of all DeskEdit windows now have full functionality.
- **New Function Locator.** Place the caret at a procedure or function call. Then press Ctrl-A and you will be taken to the definition of that function,and can then flip backwards and forwards between definition and call.
- **Extended File Info.** Dragging a file to the DeskEdit icon with Alt-Shift pressed gives extended info on files including Templates files, sprite files, modules3, PCX files, and Basic programs.
- **Auto indents** are now implemented for Basic as you type.101
- **Overrides.** A new user-choices file called overrides allows the user to override a number of preset features of DeskEdit.
- **Input Filter.** An automatic input filter can be invoked to automatically normalise files coming from a PC or similar environment, and reinstate them when they are saved.
- **Display Width.** This is now saved with extended saves, and is automatically brought into play on reloading the file.
- **C Syntax Checker**. This has been reworked, and is now even more effective at spotting mistakes as you type, including much more comprehensive multi-line checking.
- A new optional **safety-net saver** automatically retains on disc a separate copy of the latest file overwritten during a DeskEdit save.
- Plus **numerous other enhancements.**

DeskEdit 3 is available now (product code **PDE3**).
Price: £27.19 ex. VAT (RRP) £22.94 ex. VAT (RISC User)
Upgrade from DeskEdit 1 (code PDEX) £8.47 ex. VAT
Upgrade from DeskEdit 2 (code PDEU) £5.00 ex. VAT
Post & packing is £1 for upgrades, £2 for the complete package.

RISC developments

RISC Developments Ltd
117 Hatfield Road, St Albans, Herts AL1 4JS Tel. 0727 843600 Fax 0727 860263

ARTWORKS ON CD



The CD-ROM version of Computer Concepts' *ArtWorks* is now available. The CD includes *ArtWorks* version 1.5, all the fonts supplied with the original package, and the entire contents of Computer Concepts' *ClipArt CD* with over 800 *ArtWorks* example pictures and dozens of 24-bit photographs. *ArtWorks* version 1.5 provides full support for 24-bit sprites, is compatible with the graphics filter system used by *Impression Style* and *Publisher*, and is able to print and separate full colour images. The *ArtWorks* CD costs £169 ex. VAT, and a CD upgrade for registered *ArtWorks* owners is available for £29 ex. VAT. A disc upgrade to version 1.5 costs £10 ex. VAT. The disc upgrade only includes the program. For more information contact Computer Concepts at Gaddesden Place, Hemel Hempstead, Herts HP2 6EX, tel. 0442 63933, fax 0442 231632.

YET ANOTHER KERNER

Following hot on the heels of *Kerner* from Design Concept (News, RISC User 7:3), comes *KernPlus* from PTW Software. Like *Kerner*, *KernPlus* allows you manually or automatically to convert your existing outline fonts to the new RISC OS 3 format, complete with full kerning information. Included with *KernPlus* is *EvenKern*, a utility which allows all RISC OS 3 applications to display and print kerned fonts. *KernPlus* costs £15 inc. VAT, and is available from PTW Software, 72 Frosthole Crescent, Fareham PO15 6BG, tel. 0329 281930.

ACORN ACCESS ENTRY-LEVEL NETWORKING

Acorn announced a number of significant improvements and enhancements to its Acorn Universal Networking (AUN) product portfolio at BETT '94.

Acorn *Access* is an easy-to-use networking system that allows neighbouring Archimedes computers to be linked together so that distributed resources such as printers and hard drives can be shared by all systems on the same network. Specifically designed for those users taking their first steps into networking, Acorn Access provides an extremely simply and quick way to connect small clusters or class groups of computers, and offers schools a cost-effective means of getting the most from limited resources.

Release 3 of Acorn's Level 4 Fileserver software offers faster and more efficient downloading of applications with the addition of the new *Application Accelerator*. The package also includes *Gateway*, providing a bridging facility between two Ethernet networks, and between two different cabling systems such as Ethernet and Econet. Full information on Acorn's Level 4 Fileserver and other AUN products can be obtained from Beebug at 0727 840303, or any other Acorn network accredited dealer.

EASIER FONT MANAGEMENT WITH EASY FONT

Easy Font is a new font management system from Fabis Computing. It allows you to install fonts at the click of a mouse button, create new weights and styles for existing font families, and will scan through files and documents and install all fonts which it identifies in the file. *Easy Font* costs £25 ex. VAT, and comes with three discs containing 140 outline fonts in seven font families. Fabis Computing is at 95 Fabis Close, Swadlincote, Derbyshire DE11 9SL, tel. 0283 552761.

ACORN EXTENDS POCKET BOOK FUNCTIONALITY

Acorn has announced two new developments for the Pocket Book. Acorn *Plotter*, a graphic plotting application, combines an easy-to-use interface with high quality output, and has been designed to meet all curriculum needs for maths and science key stages 3 and 4, and most 'A' Level requirements. It plots mathematical functions such as Cartesian and polar functions, inequality graphs and co-ordinate pairs, and, when used in conjunction with *Calc*, the Pocket Book's built-in calculator, fulfils the role of a specialist graphical calculator. *Plotter* comes on an SSD (Solid State Disc) memory card, and is available from Acorn dealers for £29.95 ex. VAT for a single unit or at the reduced rate of £299.50 ex. VAT for a Class Pack of 11 units.

Acorn has also released a new version of the *PocketFS* file transfer application supplied with the A-Link package. *PocketFS 2* provides a number of useful enhancements and improvements, including DOS filetype mapping, the ability to highlight more than one file in the conversion window, and the ability to rename, delete and copy files in the conversion window. The new software also improves ease of connection, disconnection and configuration. Existing A-Link users can obtain *PocketFS 2* on disc for £9.95 inc. VAT, by sending the original A-Link disc to Acorn Direct, 13 Denington Road, Wellingborough, Northants NN8 2BR. This offer expires on the 30th April 1994.

HIT THE TARGET WITH CAPTAIN BLUNTHEAD

The circus has come to town, and your assistance is required. Captain Blunthead, the human cannonball, needs help hitting his target, the Balancing Brothers are seriously unbalanced, and the lions, seals, trapeze artists and clowns all need to be shown how to do their tricks. *Maths Circus* from 4Mation is a collection of twelve mathematical problem solving puzzles set in a circus. Each puzzle has five levels of difficulty, catering for a wide range of ages and abilities, and designed to provoke clear thinking in an enjoyable and challenging manner. 4Mation claims that while the easiest levels can be used by pre-school children, the hardest levels may give even teachers a difficult time! *Maths Circus* costs £27.50 ex. VAT for the single user version, and is available from 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. 0271 25353, fax 0271 22974.

Dots Before Your Eyes

Richard Hallas explains how to use ProArtisan 2 to create 3D art within art.

Recently there has been an upsurge of interest in a new artistic development, in which an apparently random pattern of dots on a page will suddenly arrange itself into a three dimensional image as you stare at it. Such pictures are often available in shops like Athena, and are now even appearing on Christmas cards. A recent edition of BBC TV's Tomorrow's World explained the theory behind these pictures, and articles have appeared about them in various magazines.

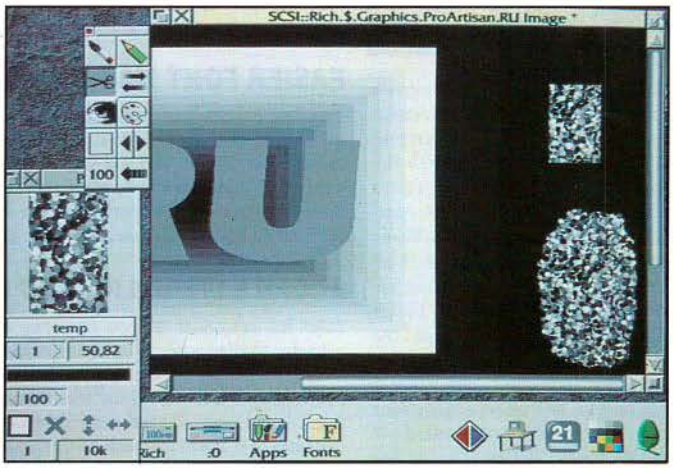


Figure 2. Generating a 'dotty' pattern

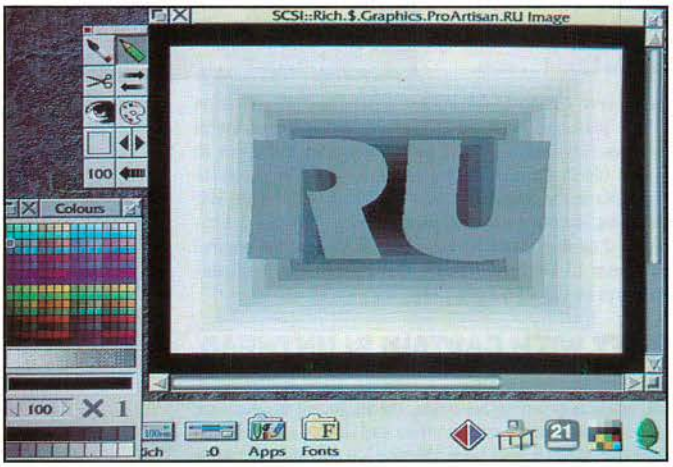


Figure 1. Creating the original image

A NEW WAY OF LOOKING

Although a new technique, the 'dotscape' picture idea is similar to the tried and tested technique of stereoscopic photography, in which two almost identical pictures of the same scene are presented, one for each eye. A stereoscopic camera has two lenses, set side by side, and takes two pictures at once. Although both lenses are pointing at the same scene, the distance between them ensures that the two pictures are taken from slightly different angles. The picture pairs are subsequently viewed together, one with each eye, and since the subtle difference between the viewing angles of the pictures is exactly what the brain expects to see in real life, the 'picture' seen (which is of course a composite of two) appears to have real solidity and depth.

Dotscape pictures are the brainchild of Connecticut-born Tom Baccei, whose varied career saw him work as a carpenter, blues musician, actor and teacher before he took up computer science. He developed the technique from stereoscopic photography and from the work of Dr Bela Julesz, who used computers to generate 3D images from randomly placed dots three decades ago, in order to study human perception. Tom Baccei has published a book full of his images called *Magic Eye: a new way of looking at the world* (published by Michael Joseph). An example of such a picture, created by the author, is shown in figure 3.

MAGIC EYES

Getting the knack of seeing the images is certainly the most difficult part of the whole process. It has to be said that some people never do see the 3D images. If you have a dominant eye you may have great difficulty in seeing the

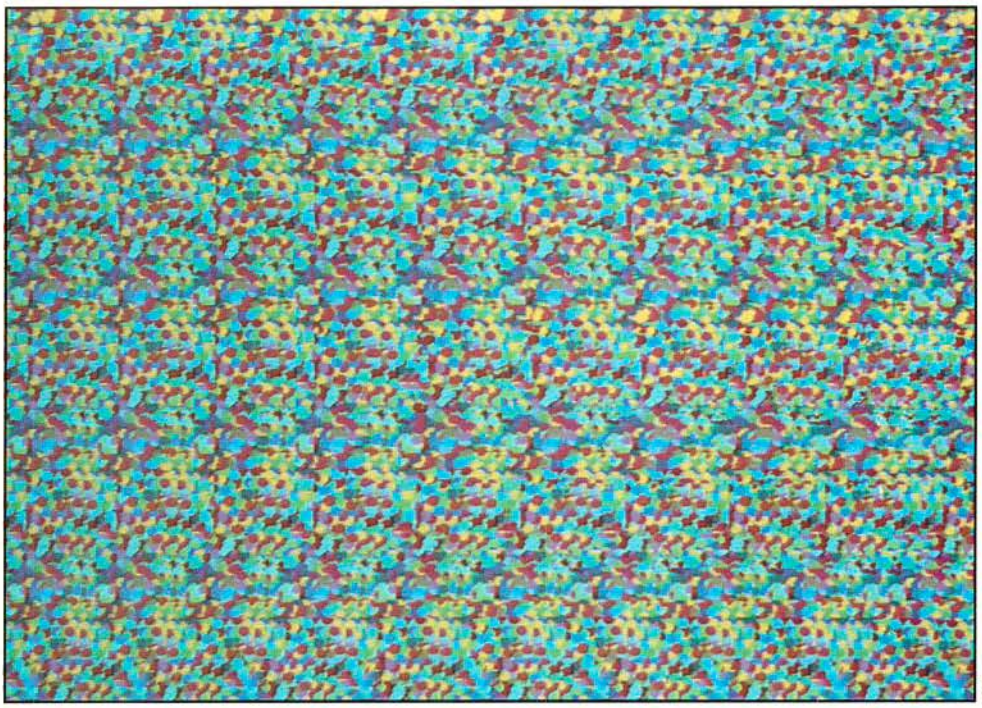


Figure 3. A 'dotscape' image

pictures. However, anyone with reasonably normal vision should be able to see them; it doesn't matter if you wear glasses or contact lenses.

The trick is to hold the picture fairly close in front of you whilst focusing at a more distant object, which is initially hard to do. If you actually focus on the paper you will never see the image, because your eyes will both be looking at the same part of the picture. In fact, rather than your eyes looking inwards as they normally would to focus on a page, they should be closer to parallel. Whereas with stereoscopic photography two images are presented to your eyes separately, here there is one picture, and your eyes have to do the hard work of separating the details.

If you find focusing past the page difficult, try sitting in a chair and watching television, and then bring the picture in front of your eyes, trying very hard not to allow your eyes to alter their focus. You should still be looking at the screen, even though you can't see it. Relax and stare through the picture, holding it absolutely still, and try not to blink. After a while the dots should dance and start to make patterns, and suddenly the image will grow out of the page. An alternative approach is to hold the image close in front of your eyes, so that you *must* focus beyond it, and then move it slowly away. Be patient, but don't spend a ridiculous time staring, as your eyes will grow tired, and you may give yourself a headache. Some people see the images very quickly; with others it may take a long time.

ART CONCEALING ART

So, what has all this got to do with Acorn computers? The answer is that ProArtisan 2 from Clares has an undocumented feature which lets you create these images easily.

For the purpose of creating a 3D image, you should think of your picture in terms of 'layers', flat pieces ranging from foreground to background like a sliced loaf of bread. Use the colours of blend set 1: this gives sixteen levels of depth to the picture, with black being the background and white the foreground. You can use as many or as few colours as you like, but using too few will not give a very good feeling of depth, and pictures which are too complicated won't work well.

In figure 1, all the sixteen shades of blend set 1 have been used to create a series of concentric

Continued on page 16

New Sprites for Future Machines

by Lee Calcraft

Nearly a year ago Acorn announced that it expected to use the new VIDC20 video controller chip from ARM Ltd in future machines. The significance of this is that, as we have shown (see *Video Nouveau*, RISC User 7:1), it extends the range of colours that an ARM-based 32-bit computer could support from a paltry 256 (the best our present Arcs can do) to a mind-boggling 16 million or more.

In fact, you may already have had your mind boggled to a degree if you attended the Acorn World show back in October last. In the Acorn Gallery were three monitors displaying past present and future technology. The central monitor was obviously hooked up to an Arc, and the one on the right to a Beeb, while the third was displaying non-dithered images of photographic quality, courtesy of a VIDC20.

On the Computer Concepts stand you could have watched Draw being used in the Desktop with 32,000 colours - thanks to ColourCard Gold, which comes with some advanced system modules from Acorn.

The future is clearly approaching fast! And to prepare us more fully for it, we have obtained from Acorn some hard details of the way in which the new extended colours will be handled on future platforms.

ENTER THE NEW SPRITE

Images with more than 256 colours (together with 256 greyscale images) will be stored in a new sprite format. Future operating systems which understand this new format will continue to use the old sprite format for storing all backward compatible images, while current operating system modules will profess that they do not understand the new format - as you can see for yourself if you try to load the sample new format sprite on this month's disc into Paint on RISC OS 3.

So how does this new format work, and what does it tell us about any new VIDC20-based machines that Acorn may bring to the market in the fullness of time?

Table 1 compares the new sprite header format with the old. You will notice from this that word 7 of the sprite header is now reserved for future expansion, while sprite masks are now a much more economical 1 bit per pixel, instead of being the same size as the image itself. But the most important difference between the new and old sprite formats is that the four-byte word at word 11 of the sprite header, which gives the native mode of the sprite for all sprites currently in use, is replaced by a number called the Sprite's Type.

THE OLD SPRITE HEADER FORMAT

Word	Meaning
1	Offset to next sprite
2 - 4	Name of sprite
5	Width in words -1
6	Height in lines
7	1st bit used (left end of row)
8	Last bit used (right end of row)
9	Offset to sprite image
10	Offset to mask or sprite image
11	Sprite's mode
12 ...	Palette data (if present)

THE NEW SPRITE HEADER FORMAT

Word	Meaning
1	Offset to next sprite
2 - 4	Name of sprite
5	Width in words -1
6	Height in lines
7	0 - reserved for future use
8	Last bit used (right end of row)
9	Offset to sprite image
10	Offset to 1bpp mask or sprite image
11	Sprite's type
12 ...	Palette data (if present)

Table 1.
Sprite header formats compared

The implication of this is that Acorn will be moving away from the use of specific mode numbers to describe any given screen mode, and

will make use instead of a set of parameters which describe a particular mode. In selecting a new mode you might therefore state what resolution you required, and how many colours you wanted on screen, rather than supplying a specific mode number. This approach is just a bit more cumbersome, but is completely flexible, and avoids the profusion of obscure mode numbers that is beginning to engulf us.

The new Sprite Type as it is called (i.e. word 11 of the sprite header), has two components:

bits 0-26 the Mode number

bits 27-31 the Type field

The top 5 bits of the Sprite Type - the *Type Field* - determine the way in which the remainder of the word is used. If the Type Field is zero, then it means that the sprite has an old fashioned mode number, and this can be read directly from bits 0-26.

HOW TO TEST FOR A NEW SPRITE

This gives us a simple test for a new sprite: if word 11 of a sprite (old fashioned mode number or new fangled Sprite Type) is greater than 255, then we are dealing with a new sprite. If you are writing software that reads sprites, you would be well advised to put in a test of this kind. You might then test the operating system version, and if it is 3.1 or less, then you should reject the sprite, because there will be no modules available that are capable of rendering it.

DeskEdit 3 uses a similar test in its *Extended info* option, though it does not reject the sprite but indicates that it is a new type, and gives its native number of colours, and the size of the image in its extended info window.

32,000 OR 16 MILLION COLOURS?

Perhaps the most interesting aspect of all this lies in the meaning of the Type Field when it is non-zero. Table 2 gives the meaning attached to values held in the Type Field in the full range of 0-31.

Type 4 (8 bits per pixel) corresponds to modes providing 256 colours, since the eight bits used to describe each single pixel can hold 256 different values (i.e. 0-255). Type 5 (16 bits per pixel) equates to 32,000 colours, while type 6 uses double the number of bits per pixel to give 16 million colours on screen at once.

As you may have spotted, if you are using 16 bits per pixel, you cannot distribute information equitably between the three primary components of red, green and blue. The problem is neatly solved by giving each component 5 bits, and ignoring the 16th. Similarly, the 32 bpp (i.e. 32 bits per pixel) mode is really only a 24 bpp mode, with 8 bpp per colour component, the remaining 8 bits being 'reserved for future use'.

Type	Meaning
0	Old format mode word. Mode is in bits 0-6 of the Mode Word
1	1 bit per pixel
2	2 bits per pixel
3	4 bits per pixel
4	8 bits per pixel
5	16 bits per pixel
6	32 bits per pixel
7	CMYK format allocated to CC
8	24 bpp format allocated to CC
9 -31	For future expansion

Table 2.
The use of the new Type Field

One further feature of the Sprite Type is that when the Type Field is non-zero, indicating that we have a new sprite with no backward compatible mode, bits 0-26 of the word are used for a different purpose, as follows:

bit	Meaning
0	Takes the value 1, to distinguish this from a so-called mode selector (we'll take a look at these next month)
1 -13	Horizontal dots per inch of sprite
14 -26	Vertical dots per inch of sprite Only 90 x 45 and 90 x 90 will initially be supported (corresponding to the low and high vertical resolutions currently in use)

So, on the basis of the new sprite format, it appears that on future platforms we can look forward to support for both 16 and 32 bit per pixel modes, offering a maximum of 16 million colours; together, hopefully, with a 256 greyscale mode. Next month we will take a closer look at how the new modes will be handled.

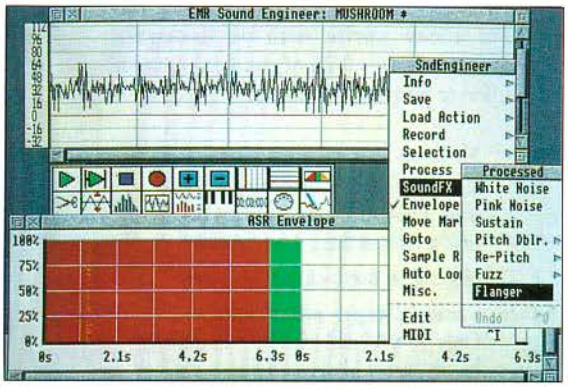
A sample 16 bpp new sprite is included on this month's magazine disc.

Sounds like WordWorks? AudioWorks!

Alan Bonsor checks out Computer Concepts' latest audio editing software.

Computer Concepts has got into the pleasing habit of releasing one or two surprise products every year. The ColourCard arrived totally unexpected in 1992, mainly because its launch wasn't preceded by several months of intense advertising. In a similar vein, *AudioWorks*, a sound sampling and editing application, has appeared with almost no hype or fanfare, slipping quietly and unannounced into a software niche already reasonably well catered for by companies such as ElectroMusic Research (EMR) and Clares.

AudioWorks is unusual in that, until now, Computer Concepts has developed packages specifically related to the desktop publishing field, with the possible exception of the discontinued *FaxPack* expansion card. However, Computer Concepts seems to be moving quite strongly into the multimedia arena with the launch of its *Eagle M2* multimedia system, and *AudioWorks* provides the sound sampling and editing software for this card. *AudioWorks* is also supplied with Wild Vision's *Lark* 16-bit sound sampler.

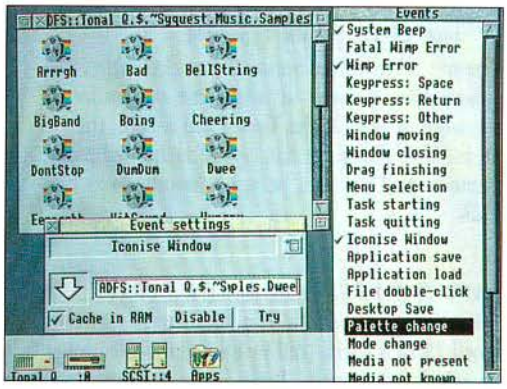


Sound Engineer's less than friendly toolbox and menu.

But is *AudioWorks* worth purchasing as an individual package? Before I attempt to answer this question, however, a brief explanation of what a sound editor is might prove useful.

WHAT IS A SOUND EDITOR?

A sound editor can be described very simply as an image processor for sound samples. Many of the processing facilities found in applications such as *ProArtisan 2* and *Translator* have similar audio equivalents. *AudioWorks*, like all other sound editors, allows you to change a sample's volume (amplitude) and pitch, remove noise, distort it, and convert it from one format to another. Sections of a sample can be deleted or moved from one position to another, and different samples can be mixed together or appended to one another.



Create a symphony of sounds with AudioCtrl

THE PACKAGE

The *AudioWorks* package consists of two discs and a glossy 60 page manual. The first disc contains the *AudioWorks* application, a utility called *AudioCtrl*, and a selection of sound samples and *envelopes* for use with *AudioWorks*. The second disc contains several more samples. If you want to record your own sounds, you will need to purchase a sound sampler. *AudioWorks* can edit samples recorded by all samplers available for the Archimedes, so you certainly won't be limited for choice. The manual is excellent. It is very well written and highly informative. Even if you know absolutely nothing about computer sound, sample formats, frequency and pitch, the first five pages provide the perfect introduction to this complex topic. An easy-to-follow tutorial section comes next, and only then does the manual delve into dialogue boxes and a detailed description of the menu options.

IN USE

Installing the software is very simple. *AudioWorks* is not protected in any way, so you can copy the discs onto your hard drive or backup discs, and store the originals in a safe place. Running *AudioWorks* installs its icon on the icon bar, and you can then either click on the icon to

create a new sample, or drag almost any type of sound file onto it. PC, Amiga, Atari, Sun and NeXT sample files are supported, and *AudioWorks* will also extract sound segments from *Replay* films and *SoundTracker* modules. Even better, *AudioWorks* automatically detects the sample format, and allows you to use the sample without having to convert it at all. With programs such as EMR's *Sound Engineer* and Clare's *Armadeus*, it can be a real nightmare deciding whether a sample needs to be converted to or from linear signed, linear unsigned or logarithmic formats.

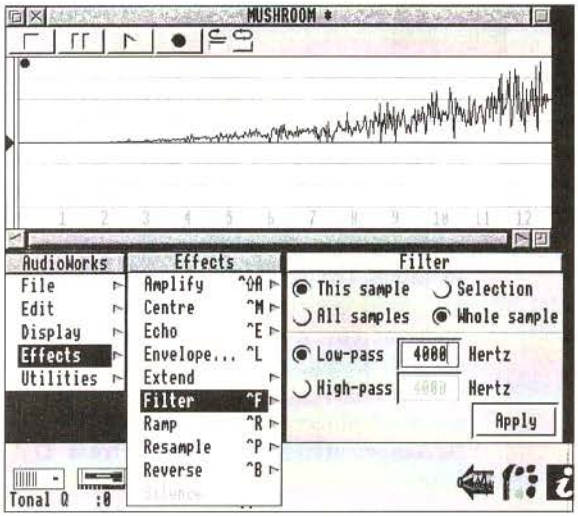
Anyone who has used Jason Williams' public domain *DS Edit* sound editor will feel immediately at home with the look, feel and operation of *AudioWorks*. This should not come as a surprise, as Jason also wrote *AudioWorks*, originally entitled *DS Edit* version 3!

The *AudioWorks* window displays the current sound sample, and contains five buttons that allow you to play, pause or stop the sample, to set the sample to auto-repeat when it has finished playing, and to record your own sound if you own an *Eagle or Lark* sampler. A real-time frequency spectrum can be displayed while a sample is playing, and an *Oscilloscope* window shows the waveform being played. You can also play the sample at different pitches via a piano-style keyboard in a window, or directly from the computer keyboard.

AudioWorks' main menu follows Computer Concepts' usual minimalist style - it contains 5 items, compared to the very unwieldy 17 in *Sound Engineer*. Having 17 items in a main menu does not mean that an application is crammed with features; it just makes the program incredibly user unfriendly. *Sound Engineers'* 12 effects are accessed through 18 menu options in two separate submenus! *AudioWorks*, on the other hand, is so user friendly that at first sight it seems to offer very little for sound processing. Its single *Effects* menu provides 10 options: *Amplify, Centre, Echo, Envelope, Extend, Filter, Ramp, Resample, Reverse* and *Silence*. Most of these options lead to a standard dialogue box in which you enter the necessary parameters and select the sample, samples or section of a sample to which the effect should be applied. The various effects are all applied to the sample in the background, so if you perform a very processor-intensive task on a massive sample, you'll still be able to use the computer.

THE AudioCtrl UTILITY

With only four pages devoted to it in the back of the manual, one would be forgiven for thinking that *AudioCtrl* is not particularly important or interesting. Let me just say this - *AudioCtrl* is brilliant! It allows you to attach a different sound sample to 27 Wimp events, such as opening or closing a window, saving a file, and starting or quitting an application, in the process creating a symphony (or cacophony) of sounds on your Desktop.



A sound sample in AudioWorks, fading in from nothing to full volume and AudioWorks dialog menu.

THE VERDICT

I was initially in two minds as to whether or not I would purchase *AudioWorks*. I was very impressed with its manual and fell in love with *AudioCtrl* from the moment I laid eyes on it, but its excellent user interface hid so many options that for quite a while I thought it was far less powerful than *Sound Engineer*. This was a very mistaken belief! It is as powerful, and the beauty of its user interface is that *AudioWorks* is simple enough for almost anyone to use, a fact which should definitely appeal to schools, beginners and experienced users alike. If you are interested in any aspect of sound processing on the Archimedes, *AudioWorks* is the package for you!

PRODUCT INFO

Product	*AudioWorks*
Supplier	*Computer Concepts Ltd* *Gaddesden Place,* *Hemel Hempstead,* *Herts HP2 6EX.* *Tel. (0442) 63933* *Fax (0442) 231632*
Price	*£49.00 ex. VAT*

Morphology

Alan Wrigley looks at two RISC OS morphing packages.

Morphing has become all the rage recently. If you haven't yet caught up with it, the term is derived from "metamorphosis", and refers to the process of transforming one image into another, usually via a series of intermediate images which are then viewed as an animation. The technique has been popular with film studio special effects departments for some time, and now it is catching on in the Acorn market. Recently two products have been released which enable you to produce your own morphed objects: *Morpheus* from Oregan Developments, and *Rephorm* from Oak Solutions.

Both products are designed to produce the same result, and largely go about the process in the same way. The differences between the two lie primarily in ease of use and in the format chosen for the finished product. For this reason it will be helpful to look at the products together, with significant differences highlighted at the appropriate point.

To produce a successful morph, you need two images that will blend well together, with plain or very subdued backgrounds. The greater the difference between the images, the more difficulty you will have in creating a suitable morph. For example, given full-face portraits of the Prime Minister and the Leader of the Opposition, you can effect a stunningly smooth transition between the two quite quickly. Similarly, if both pictures are taken from the same angle you could successfully transform a Porsche into a Skoda (though why you would want to I can't imagine).

Having chosen your images, you simply import them into the application to start morphing. Both packages can accept standard sprites, but Rephorm can also handle Acorn's new 32-bit sprites while Morpheus accepts 24-bit Clear files. Both images are then displayed on screen. Morpheus chooses to show them in separate scrollable windows in the correct proportions, while Rephorm has a single window with two non-scrollable panes, scaling the pictures to fit. This means that the images in Rephorm may appear distorted if their proportions deviate from those of the pane (though this only affects screen display during editing, not the morph itself). In both cases the image can be enlarged to facilitate editing, but whereas in Morpheus the window is re-sized, in Rephorm the pane stays the same size, so you have to move the enlarged image around within it to edit different sections.

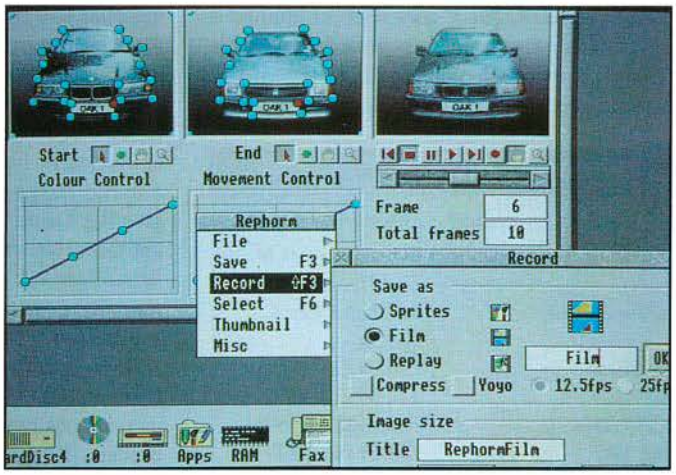
This tends to make Morpheus superior in terms of screen display (though a planned upgrade to Rephorm will address this point). However, Rephorm also has a third pane which is used to display in real time any of the intermediate images of the morph; to specify which one you just select a frame number by dragging a slider bar. To do this in Morpheus you must use a menu option to calculate the required morphed image, and once displayed it is not updated in real time.

So far, everything is straightforward, but the real work involved in producing a morph is yet to begin. In order to make the transition as smooth as possible, a number of control points are used, which can be independently positioned in the start and end images. The morphing process will use these control points as a reference when calculating the intermediate frames, moving each point in the start image closer to its corresponding point in the end image with each frame. So if you were morphing between two faces, for example, you would position control points around the eyes, the nose, the chin etc., and map these to the corresponding features in the second image. If done properly, this results in the smoothest possible transition between the two images. The quality of the resulting morph is therefore largely dependent on the amount of time and effort spent in positioning the control points.

For ease of use in this respect, Rephorm scores over its rival. You simply add control points where you want them on either image by clicking with the mouse, and then drag the corresponding point around on the other image. You can have as many or as few points as you want, and you can delete or move any control points at any

time. Because the morphed image is updated in real time, you can see the effect immediately as you alter the control points.

Morpheus, on the other hand, starts with an evenly-spaced grid of control points, or knots, which you can move in a similar way. You can choose the size of the grid, but you can't add or delete knots. So if you choose a 10x10 grid, you always have 100 knots visible, whether you want them all or not. This can make it confusing to edit as there are often unwanted knots floating around. To make it easier, Morpheus allows you to add guidelines between knots to remind yourself which ones relate to which feature of the image, but it is still a more complex and fussy way of working than with Rephorm, and the editing tools are not as simple to use either. However, Morpheus has one feature which I missed when using Rephorm - you can export the complete set of current control positions from one image to the other, which can save you a lot of time in repositioning when one image is very similar to the other. Oak tells me that this feature will be incorporated into the next release of Rephorm.



Rephorm in action

Both packages allow you to select a group of control points and alter the linearity of the movement between the start and end of the morph. In other words, whereas most of the image will make a smooth linear transition from one end to the other, you can arrange for parts of the transition to move more quickly at some point and more slowly at another. Rephorm also allows you to alter the linearity of colour change in the same way. Morpheus on the other hand allows you to distort the path along which specified knots travel by making them move over a Bezier curve.

Rephorm has one useful additional feature, which is to distort a single image as opposed to transforming it into another. To do this, you just drag a single sprite to the application, select the *Distort only* option, and set the control points in the second window to the required distortion. Unfortunately, the lack of a facility to transfer the complete set of control points from one window to the other is a serious omission in this case. You may want to make several attempts to get the right distortion effect, in which case you should be able each time to transfer the original set of points in order to start from the same place as before. I shall look forward to the upgrade!

Morpheus in action

Morphs are always good fun, of course, but rather pointless unless you can make use of them elsewhere. Both packages can output the finished morph as a Replay file or as a set of sprites consisting of all the intermediate frames, or they can output a single sprite from any frame. Each can output the full morph in a proprietory

format; in the case of Rephorm this is the Ace file format (unsurprisingly since Ace is now a part of Oak Solutions), which is already widely used for animations and can be viewed using the PD application *Projector*. Morpheus creates a stand-alone application that shows the animated morph when run. This means that you don't need the viewer to see it, but it does seem to produce a much larger file. A utility is provided to enable you to compile such a film from any sequence of sprites, whether generated by Morpheus or not.

PRODUCT INFO

Product	*Morpheus*	*Product*	*Rephorm*
Supplier	*Oregan Software Developments 36 Grosvenor Avenue, Streetly, Sutton Coldfield B74 3PE. Tel. 021 353 6044*	*Supplier*	*Oak Solutions Ltd. Dial House, 12 Chapel Street, Halton, Leeds LS15 7RN. Tel. 0532 326992 Fax 0532 326993*
Price	*£34.95 inc. VAT.*	*Price*	*£58.69 inc. VAT.*

CONCLUSIONS

The big question to answer is: who needs a morphing package and what practical use does it have? Only the customer can answer this, but if you use your computer to produce moving images, a morph can certainly add some life. Both these packages produce convincing morphs, and there is little difference between them in terms of the finished result. Choosing one of the two is really down to individual preferences. Rephorm is much the easier to use for editing, and its manual, though short, is also much clearer. Its ability to distort a sprite is also a useful image-processing tool. This tends to give Rephorm the edge, though Morpheus is considerably cheaper. Don't forget that the RISC User 7:2 magazine disc also included a morphing application, together with an explanatory article in the magazine. Having said all this, it is clear that morphing is still in its infancy on RISC OS, and if these early incarnations prove that there is a market for the process, I have no doubt that more powerful packages will appear. uR

Dots Before Your Eyes (continued from page 9)

rectangles going from white to black, which produces the effect of a stepped pyramid going into the page. The letters 'RU' appear in bold type in the centre of these rectangles in a mid-grey colour, roughly halfway between black and white; this translates directly to 'halfway between back and front' in the 3D image. If you stare at the finished dotscape, you should eventually see these letters situated towards the centre of an inverted pyramid.

To create a 3D picture, begin by clearing the ProArtisan window to black. Then click with Adjust on the '1' in the palette window to copy blend set 1 to the picker block at the bottom of the window. Then draw your picture using these colours. Always bear in mind that the darker the shade, the further back the layer will be. Use simple shapes and varying shades. Fills are very useful for getting a good 3D effect. Leave a space unused at one side of your picture for the next stage.

When you are satisfied with your image, choose *Special>Dopple* from ProArtisan's Paint menu, and make sure that *Sample* is ticked. Then paint an area of dots in an unused portion of your canvas. Next, select the *Sprite* tool and cut out a medium-sized rectangular area of the resulting dotty pattern (see figure 2). The cut sprite should be roughly twice as tall as it is high. Then press Ctrl-M and wait for a few seconds. You should see your entire canvas covered by your repeating dotty pattern. If you see any coloured vertical breaks between the repeated portions, click on Undo, cut out a new sprite and try again. At this point you should be able to see the 3D effect directly on the screen.

The effects are retained on printout. To make a printed copy, size the window on the screen to exclude the unused part where you painted the dotty pattern in the first place, and use *Crop to window* to remove it, and then use the print option.

The grey-scale image on screen is fine, but some people feel that the 3D effect is enhanced if the dots are in colour, and the dotscape certainly looks prettier, so as a final step you could use the Magic Brush to translate the grey dots into nice bright colours.

The dotscape image described here is included on this month's magazine disc as a Sprite file. The 3D effect can be seen by viewing this directly on-screen, as well as printing it out. uR

ArcFax 1.10!

A new version of the RISC OS Fax modem program, with major extra features.

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- TWAIN compliant - allows material for faxing to be scanned in directly.
- Support for Class 8 - voice modems (e.g. ZyXEL) lets your computer act as a fax machine, an answering machine and a fax switch. "Tape" phone calls.
- Voice, Fax and Data all in one program with Zmodem for file transfer.
- Dozens of new smaller features and ehancements. Merge faxes, Hold and Release, Auto print, Auto forward faxes. Server scripts allow custom fax/voice systems to be constructed. Direct print from batch, viewer control panel. Log file window. Direct send/receive with call option. System schedule for receiving faxes with auto repetition. Caller ID support, call barring. Save/load phone book as CSV. Debug display. Auto send after time. One call, multi fax send capability.
- Standard features of ArcFax 1.0X - Class 1 and Class 2 fax modem support, phone book, schedules, anything you can print you can fax etc.

ArcFax 1.10 £35.00 (inc VAT and carriage)

Upgrade from ArcFax 1.0X to 1.10 £12 + your original disc (includes new manual). Purchasers of modems from David Pilling, can upgrade free.

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USR Sportster desktop	Class 1	£235	£255	£275	£295
ZyXEL 1496E desktop*	Class 8	£330	£350	£370	£390
ZyXEL 1496E+ desktop*	Class 8	£390	£410	£430	£450

*Please write for full details of ZyXEL's and other modems.

TWAIN - Linking applications and Images

TWAIN allows any compliant application to acquire images from scanners etc. See last months Risc User advert for full details of TWAIN and ImageMaster.

TWAIN for the HP ScanJet IIc	£20
TWAIN for the Canon IX3010 (Scanlight Professional)	£20
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The Canon BJC-600 Colour Printer

Reviewed by Mike Williams

I have spoken to many computer users over the years, and at the top of many wish lists has been a desire for a low-cost, high-quality colour printer. When the computer display can be so colourful, it's a shame when this can only be printed in black and white. However, the new Canon BJC-600, supplied for review by Computer Concepts complete with Turbo Driver, may at last be the answer for many.

Figure 1. The test sprite

The printer itself is remarkably small, and clearly borrows much in design, and in components, from other Canon printers (it has the same sheet feed arrangement as my normal BJ200). It has a decidedly chunky appearance, occupying 410mm x 180mm on your desktop (plus more for paper transport in and out). The top surface has a neat array of recessed control buttons and LED indicators. Lifting the lid reveals the usual DIP switches and the all-important print head complete with four ink cartridges (in semi-transparent containers so that the current ink level can be readily seen).

The BJC-600 is yet another from Canon's stable of bubble jet printers (see our reviews of the BJ10e in 4:4 and the BJ200 in 6:5). To achieve full colour printing, it uses cartridges of magenta, cyan and yellow ink, together with black. This goes some way to ensuring that the printer can achieve both good quality colour printing when required, plus genuine black when black only is needed. In the past, many cheaper colour printers have relied on mixing colours to achieve a near black (often no more than a dark muddy brown).

Figure 2. The Canon BJC-600 colour printer

The Turbo Driver supplied (which includes a special connecting cable) is Computer Concepts' RISC OS 3 version covering all the Canon bubble jet printers (in fact I used the BJC-800 definitions from my existing Turbo Driver). Installation of the Turbo Driver software is very simple and straightforward thanks to the instructions supplied. Once loaded on the icon bar (using a satisfyingly coloured sprite), the driver can be configured as required - your most likely choices are between four-colour and monochrome printing.

CC also recommends preferred settings for the BJC-600. These are set using nthe buttons on the

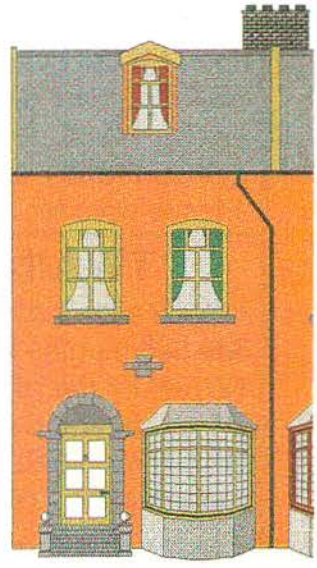


Figure 3. Acceptable printout on plain paper using clip art.

printer as described in the Canon documen-tation. The four manuals (Start-Up Guide, User's Manual, Colour Documentation Guide and MS-DOS Application Guide) are quite clearly written, but some time is needed to assimilate all the relevant information which they contain. With printer set up and connected, Turbo Driver configured and loaded, you are ready to print.

THE BJC-600 IN OPERATION

I guess what most people want to know about any printer is how good the print quality is and how long it takes. Past experience has shown that there is usually a trade-off between these two. The quality, in my view, is excellent (the BJC-600 provides a maximum resolution of 360dpi). However, the end result is probably not as clear or as bright as the screen image. For testing I used a scanned image from a colour photograph (see figure 1). The screen image of this was very good, but not as good as the original. The best printed version (see figure 4) was even more grainy by about the same amount.

Figure 4. Examples of printout (from top to bottom) using plain paper, plain paper with extra black and coated paper.

I say 'best' deliberately. The Canon is supplied with a small quantity of special coated paper, and this certainly gave the best results. However, the printer will work with plain (photocopy) paper, but there is a clear if small difference in the quality of the printed image (see figure 4). I presume that this arises from the much greater absorbency of plain paper.

In addition, the nature of the coloured image also has a bearing on the results. A full colour photograph, scanned and used as described above, undoubtedly tests the capabilities of the printer (and printer driver) to the full. If you are using images with uniform areas of colour (cartoon characters, graphs and charts, or clip art for example), then printing on plain paper will appear to give, relatively, a much better appearance (see figure 3), provided you don't expect a perfect match between screen colours and those printed.

The results of printing in black only seem very comparable to those I have achieved with the BJ200. In all cases, uniform areas of a single colour or shade of grey, are printed very uniformly on the paper with very little trace of banding or other unpleasant patterning.

Speed is more difficult to determine. One of the major advantages of CC's Turbo Drivers is that you regain control of your machine well before printing has been completed. This is still true when using the BJC-600, but the added complexity of rendering a full colour image increases the release time, as well as increasing the actual print time. Some comparative timings between the BJC-600 and BJ200 for two examples are given in Table 1.

	Release	Print	Extra Time	Paper Time	Colour Black	Black Type
Example 1						
Colour BJC-600	85	185	No	Plain	2	3
	90	195	Yes	Plain	3	2
	90	195	No	Coated	1	1
Mono BJC-600	35	45	No	Plain	-	2
	30	60	Yes	Plain	-	1
Mono BJ200	25	45	—	Plain	-	3
Example 2						
Colour BJC-600	60	110	No	Plain	2	3
	55	180	Yes	Plain	2	2
	55	180	No	Coated	1	1
Mono BJC-600	27	60	No	Plain	-	2
	27	95	Yes	Plain	-	1
Mono BJ200	27	55	—	Plain	-	3

Table 1. Comparative print times and relative qualities for two print samples (times in seconds)

The two examples used in the test were firstly a full colour sprite about 240K in size (as in figure 1), and secondly an A4 page from an Ovation document which includes two colour and one mono Draw file images. The BJC-600 has a switch allowing 'extra black' to be selected on printing, which can improve print quality on plain paper. The use of this and plain or coated paper is shown in the table.

In contrast with the BJ200, release times and print times for colour printing have more than doubled compared with monochrome, but that is to be expected. Coated paper gives definitely superior results for both colour and monochrome printing. Interestingly, I felt that monochrome printing with the BJC-600 was as good as or better than that achievable with the BJ200, but again no real surprise as the BJC-600 includes a black ink cartridge in addition to the three coloured ones.

Please remember that the timings given here are only intended for general guidance. The results will depend very much on the files being printed (and other factors relating to your system). Quality is also subjective, particularly when comparing monochrome samples. Both the BJ200 and the BJC-600 give excellent results.

CONCLUSIONS

There is no doubt in my mind that the BJC-600 is an excellent printer, both for colour and monochrome work, though unless you stick to simple blocks of colour, you will need to invest in the special coated paper for really acceptable printout, and that's an extra on-going cost. You also need to remember that there are four ink cartridges to be replaced from time to time. However, I do feel that the BJC-600 with CC's Turbo Driver is one of the best colour printing combinations yet to appear for the Archimedes. If colour printing is what you need, and you can justify the cost, then give the BJC-600 every consideration.

PRODUCT INFO

Product *Canon BJC-600 Colour Printer*

Supplier *Computer Concepts*
Gaddesden Place,
Hemel Hempstead,
Herts HP2 6EX.
Tel. 0442 63933
Fax 0442 231632

Price *£529 + £10 carriage + VAT*
Price includes printer, all documentation, one set of ink cartridges, CC Turbo Driver and all connecting leads.
Coated paper (250pp A4) £22.00 ex. VAT Ink cartridges (black) £6.50 ex. VAT (colour) £8.00 ex. VAT
The Canon BJC-600 is available from all good dealers inc. Beebug.

Just a Page

Our short programming feature this month provides a potentially useful function for all hard disc users.

Customised System Boot

by Tony van der Hoff

It is often useful to have alternative start-up sequences depending on the intended use of your system: for C development work, Acorn's DDE may be required, whereas for DTP you may want Ovation to be loaded. Alternatively, different users of the same system may have different requirements. Similarly, if all you want to do is run a game which takes over the machine from floppy disc, there is precious little point in waiting for the the main boot sequence to complete its activity.

If the *FloppyBoot* program listed below is executed from the main system !Boot (which must be located in the root directory of your hard disc), it searches the floppy disc (if present in the machine) for a file called !Boot. If it is found, any currently open files are closed, and !Boot is executed from floppy instead. It is necessary to re-assign the filing system and default drive, in order to cope with a game running from floppy. If no floppy disc is found, or it doesn't contain a valid !Boot file, the program returns to the main boot sequence.

The program is well structured and commented, and more experienced programmers should have little difficulty in following its logic.

To use FloppyBoot, save the program in the root directory of your hard disc. Insert a line in your main !Boot file of the form:

```
Run IDEFS::HardDisc.$.FloppyBoot
```

(modified for your hard disc drive) before any other Filer_Boot or Run commands. Save your alternative boot sequence on a floppy disc and insert this disc in the floppy drive before booting your system. That's all there is to it. If you have more than one additional boot system just copy each to a separate floppy disc and use as appropriate.

```
   10 REM Program   FloppyBoot
   20 REM Version   A1.0
   30 REM Author    Tony van der Hoff
   40 REM RISC User March 1994
   50 REM Program   Subject to Copyright
   60 REM           Not Public Domain
   70 :
   80 DirName$="ADFS::0.$"
   90 FileName$="!Boot"
  100 AppName$="BootFloppy"
  110 :
  120 DIM TempBlock% 128:REM Temporary w
orkspace
  130 :
  140 ON ERROR ON ERROR OFF:PROCerror(ER
R,REPORT$+" (internal error code "+STR$E
RL+")"):END
  150 :
  160 REM find !Boot on floppy; give up
if not found
  170 $TempBlock%=FNzString(DirName$+"."
+FileName$)
  180 SYS"XOS_File",17,TempBlock% TO r0%
 ;flags%
  190 IF r0%=0 OR (flags% AND %1)=1 THEN
 END
  200 :
  210 REM valid !Boot found on floppy; c
lose any open files
  220 SYS"XOS_Find",0,0 TO r0%;flags%
  230 PROCReportErr(flags%,r0%)
  240 :
  250 REM Change File System and make fl
oppy current directory
  260 $TempBlock%=FNzString(DirName$ )
  270 SYS"XOS_FSControl",0,TempBlock% TO
 r0%;flags%
  280 PROCReportErr(flags%,r0%)
  290 :
  300 REM Run floppy !Boot and exit
  310 $TempBlock%=FNzString(DirName$+"."
+FileName$ )
  320 SYS"XOS_FSControl",4, TempBlock% T
O r0%;flags%
  330 PROCReportErr(flags%,r0%)
  340 :
  350 END
  360 :
  370 REM make a Null-terminated string
  380 DEF FNzString(a$)
  390 = a$+CHR$(0)
  400 :
  410 REM Report a BASIC error
  420 DEF PROCerror(err%,error$)
  430 !TempBlock%=err%
  440 $(TempBlock%+4)=FNzString(error$)
  450 PROCReportErr(1,TempBlock%)
  460 ENDPROC
  470 :
  480 REM report an error block if V fla
g set
  490 DEF PROCReportErr(flags%,ErrBlock%
)
  500 IF (flags% AND %1)=1 THEN SYS"Wimp
_ReportError",ErrBlock%,1,AppName$
  510 ENDPROC
```

Archimedes the Navigator

Mark Sealey navigates around the latest educational software from Topologika.

Topologika is a long-established producer of high quality software for the educational market. Navigator is one of the latest packages designed for use in the mathematics and geography National Curriculum. It is based on maps and plans, which you move around to develop mapping skills and that oft-quoted but easily misunderstood notion, spatial awareness. Suitable for children in key stages 2, 3 and 4 (9 to 16 years), it has been produced to Topologika's usual high standard, and can be recommended for most teaching styles.

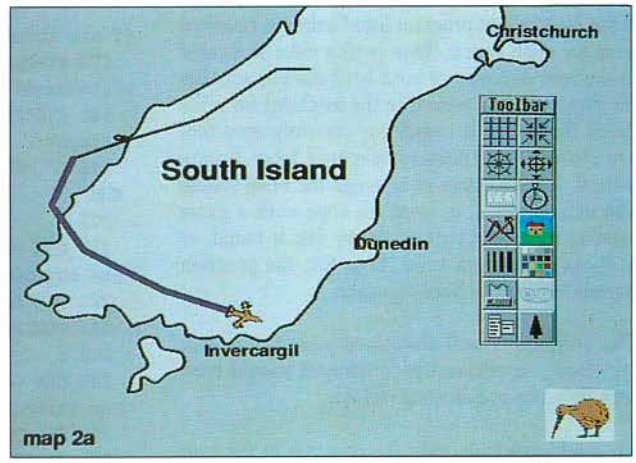


Figure 1. Flight accross New Zealand

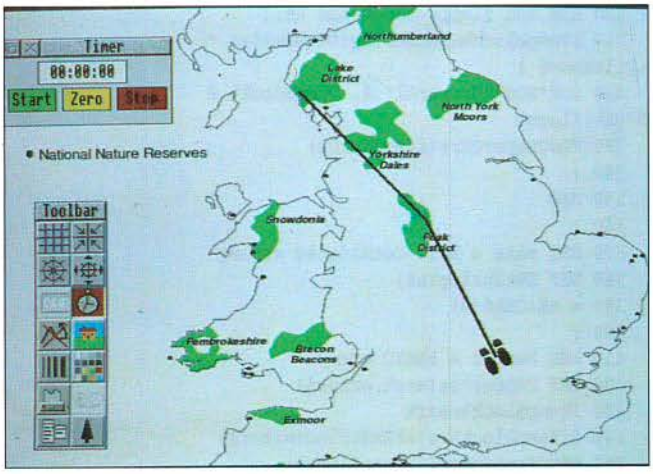


Figure 2. English and Welsh National Parks

WHAT NAVIGATOR DOES

David Wilkins, the program's author, describes Navigator as a "content-free pack to develop navigation and mapping skills". Essentially, you use a variety of techniques to move around a map or plan. This is typically a standard graphic, imported as a Draw file, sprite or Imagine file into Navigator's main window (see fig. 1). Many such are supplied on one of the three discs which comprise Navigator, but the documentation will help out if you want to create your own.

There are seven ways in which to navigate: rubber banding (as in Draw), turtling, using 4, 8 or 16-point compass directions, with bearings, or Ordnance Survey northings and eastings, by entering longitude and latitude co-ordinates and using vectors.

The pointer used to plot your position and heading can itself take any form that you care to make it: design your own dart or turtle in Paint, for example, or select from the dozen or so attractive ones already provided.

As you move around a map, which can be virtually any scale (your table top or the planets in the solar system), you can opt to leave a trace, which can be customised for colour and thickness.

But this simple, effective and highly visual program idea can take off wherever you want it to. What you do next is really up to you: construct a treasure map and invite a friend to navigate around it, explore the celebrated coastline of Norway (and we all know who was responsible for that, don't we?), answer a series of questions set by the teacher about the English Channel shipping lanes or plot some of the routes of the early European overseas explorers. And it can all be printed out, of course.

USING THE SOFTWARE

Before using Navigator, though, you must first register your disc, which may then be copied.

Navigator is next loaded onto the icon bar in the usual way and is ready for use.

Clicking with Select does nothing: it is necessary, rather, to load a map onto the icon. Then, clicking with Menu over this map will give you either a toolbox or toolbar (depending on the preference set, see below). This has 14 options, which control the behaviour and appearance of the navigation: snap to grid, time it, display a compass etc. (see fig 2).

It is via this menu that you can activate the Navigator recorder to create a sort of sequence file, rather disappointingly of only 20 moves, for later playback or analysis.

PREFERENCES

The icon bar has four options aside from Info, Save, Clear and Quit. These are: to use the full screen, to change the navigation system (turtling, vectoring etc.), to calibrate maps and plans to particular scales and for particular uses, e.g. grid spacing size or pointer origin, and preferences. Here you can set a wealth of defaults affecting the way in which the program will subsequently behave. This is a particularly useful part of the software; it is easy to use and the settings can be saved in the usual way.

LINKPOINTS

Imagine that you wanted to zoom outwards from the pupil's desk to their classroom, from a plan of their school in its grounds to a map of the district and ultimately to the relevant country or region. A powerful feature of Navigator permits this. You can set 'link-points' in a sequence of maps to join them together, one map passing directly to the next as required, and enabling the user to appreciate the relationship between them.

CURRICULUM IDEAS

Obvious areas of the curriculum in which Navigator can be used are geography and maths. In the first case, following directions and interpreting maps as well as skills related to transport suggest themselves straight away, though there are many others.

The Shape and Algebra Attainment Targets of maths come to mind, as should many of the more general process skills in AT1: estimation, of course, is everywhere. Pupils working in groups at exploratory and investigative Navigator tasks ought to be developing social (joint problem solving and turn taking) and language (using a precise vocabulary set and the stages of forming, testing and evaluating hypotheses) skills as well.

DOCUMENTATION AND SUPPORT MATERIALS

As usual, these are excellent: the pack is in a standard A5 case and the booklets are the same size: there is a teacher's manual, well indexed and covering all the points that you would want to know to get you started. It helps you make the most of the options available, as well as providing a reference for ways through the program, setting up preferences etc. This 40 page manual is particularly useful for the calibration routines, and in explaining the switches which you can enter at the command line to alter the way Navigator starts up.

There is a short but extremely helpful starter pack, with classroom ideas in the form of another booklet, as well as a couple of separate sheets to be used as prompts for tasks that are based on Navigator - they direct pupils to and around a particular map with some measure of interaction. A popular one this spring might be to track the Antarctic expedition.

Finally, there is a technical guide, with rather small print, to help you through the intricacies of different operating system configurations during installation and printing.

PRODUCT INFO

Product	*Navigator*
Supplier	*Topologika* *PO Box 39,* *Stilton,* *Cambridgeshire PE7 3RL.* *Tel. and fax 0733 244682*
Price	*£45 ex. VAT* *Additional charge for site licence: Primary schools £70 ex. VAT Secondary schools £85 ex. VAT*

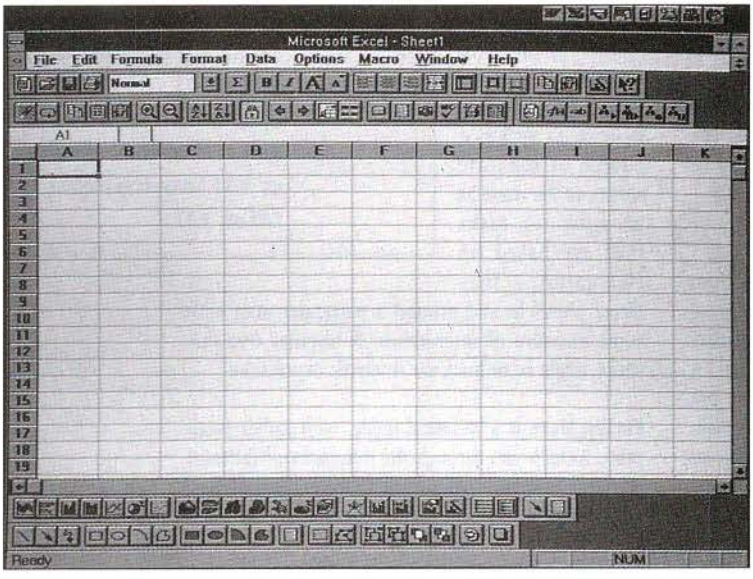
CONCLUSIONS

Navigator represents good value for money, and fills a gap in the software base for this area of the curriculum. It is easy to use, well supported and presented, and has been developed along sound educational lines. The faults of the software are few. It is adaptable to most situations and suitable for pupils of most abilities and aptitudes. It does not, for example, rely heavily on written language, but it is easy to learn and use. It scores heavily by presenting the same idea (movement in one plane) in a variety of guises. This should enable pupils to consolidate their grasp of what can be a difficult set of concepts.

What's Cooking at Colton

The eponymous Mark Colton gives some insight into his thinking.

An elderly friend of mine told me recently that she'd just bought a cordless telephone. She was astounded: "It's got a fifty page manual! All I wanted was a telephone with no wires!". It's a big challenge for the designers of everyday things. What you want are amazing features; it must be obvious that the features exist and it must be obvious how to use them: ideally there should be no manual and no help system because it's all clear from the controls. There's not much software which gets there yet, but I think Colton could design a telephone which doesn't need a book.



American designers love lots of unrecognisable buttons.

HISTORY

I've been involved with three generations of productivity software: first the View family for the BBC micro (View came out in 1983), then PipeDream (the first version was published in 1986), and finally our 'Z' family; Wordz was released in January 1993.

Since the early eighties, the fashion for application design has changed from separates (WordStar, VisiCalc) to integrated (Lotus 123, Jazz, Symphony) to big separates and small integrated (MS-Word, Excel, MS-Works, Claris Works) to object oriented (yet to happen).

The first separates existed because that was what happened: no one really planned it. Then everyone did start to think about it and decided that it would all be much easier if everything was integrated together: hence products like Symphony. This approach proved unpopular because there was no simplification as a result of the integration, just a huge program, and in some ways it wasn't as capable as its separate friends.

As the mega-applications have become unmanageable for the normal person, it has been possible to get simplification and integration: just by reducing the potential ability of programs you can cut out complexity, so integrated software has become the lighter solution: Microsoft Works, for example. The different modules can all share similar controls which makes learning easier. The needs of most users are satisfied by modern integrated software.

Having finished the View family of separates, I believed in integration: PipeDream was our first stab. It's proved a very popular program, because it's so versatile. PipeDream's integration is much tighter than that of conventional integrated software: you don't work in different 'windows' for word processing and spreadsheet, you just do it. But there is a class of users who don't need integration: they want just to work on text or whatever. In their case the integrated program makes life more complex as they get a load of stuff they don't use. PipeDream confirmed that there are benefits in integration: yet it was clear that we could now do better. We wanted users to be able to take their own view of their data rather than ours: if you want to work on a word processor, and you don't like

spreadsheets, fine; or you can integrate your data totally if you want to. So we designed the modular 'Z' family where you can buy separates to start with and grow into the integrated Fireworkz, or buy Fireworkz straight off if you want integration.

PipeDream was designed when the computer world was built of characters: it was also clear that it was time for our new software to go graphical.

IT'S A WORLD FULL OF GRAPHICS

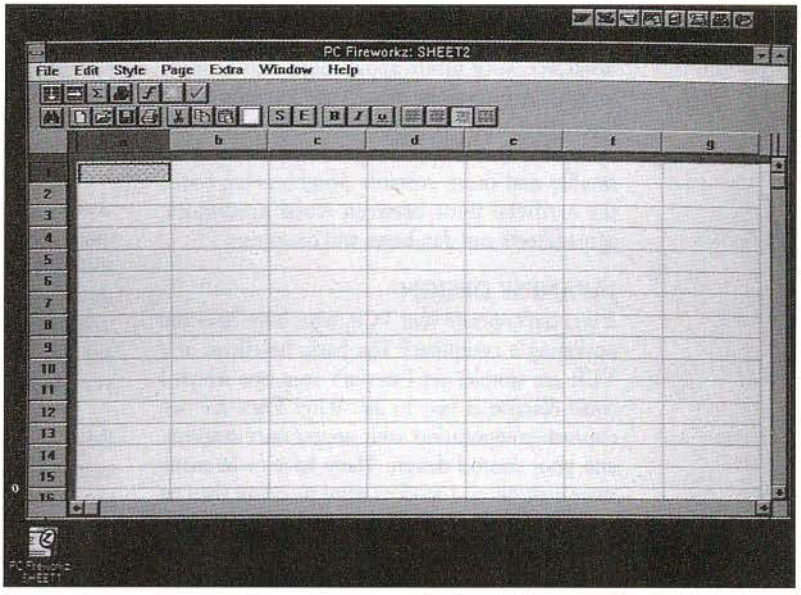
There's a gamut of comments I get from users which relate to the emergence of the Graphical User Interface (GUI), which is replacing the older character based interfaces very rapidly now. Comments like: "I can't read the fonts on my screen"; "printing is very slow using RISC OS printer drivers on my dot matrix printer"; "I just want to edit pure text as fast as possible". There's loads more.

We're all being dragged into the world of graphics, whether or not we like it. By 1985, character based computers were getting quite good, but the Mac had already shown a new way ahead: Bill Gates decided he'd better follow, and Microsoft Windows was born. GUIs have absorbed the increases in computer speed since: just think how snappy a modern View or Inter-Word would be without on-screen fonts in the way. It's only now that font-based applications are reaching similar editing and printing speeds to the old character programs; but to get the most out of a modern font-based program you need RISC OS 3, 4MB of memory, a multi-sync monitor, a hard disc, an inkjet or laser printer and an ARM3. If you think this is a pretty good machine, you're right, but this is the cost of the move to graphics.

It says a lot that you can still use most modern Archimedes programs on a 2Mb RISC OS 2 machine with a standard monitor, floppy disc and dot-matrix printer: but it's at the cost of some inconvenience for the user. Wouldn't we be better off with character based software on modern computers? Right now, with an older computer, maybe, but with the latest and fastest computers (the A5000, for example), I'll stick with the GUI.

WINDOWS

Software companies have two factors to consider when deciding to write a program. How many copies can they sell? How much will it cost to write the program? Windows looks ever more alluring because of its commercial success and that of the PC standard: a successful Windows program sells a lot! Also, Microsoft has invested a great deal in programming tools for Windows like Visual Basic and Visual C++ so that the cost of creating programs is reduced, especially when compared to other computers.



Colton Fireworkz for Windows under development

Taking a long view, it's difficult to see how other platforms (including Unix) can survive: the price/performance of a PC, the size of the growing Windows market, and the quality of the tools for the professional add up to an overwhelming advantage. Presently, Windows is pretty ungainly to use, but you can be sure that Microsoft is working on it. It's a moving target.

At the moment, discriminating users prefer RISC OS, but unfortunately for us in the Acorn world, not many bother or want to discriminate.

There is an old adage for the suppliers of computers: if you want independent software companies to write programs for your computer, you must not build in the applications to start with:

otherwise there's no room for others in the market. So far, Microsoft has taken this approach with Windows, but how long will this carry on now Windows is established? The splitting of the latest versions of Word and Excel into hundreds of objects which are usable by other software engineers in their own programs looks like the first step towards some of these objects being built into Windows as they become commonly used (objects are software components).

Will code gradually get sucked out of the applications into the operating system until the big three applications are part of Windows itself? Is this a way for Microsoft to eat Lotus and Borland and Wordperfect, or will the American FTC get there first (the FTC is the equivalent of our Monopolies Commission)?

Whatever, your future applications will be more integrated: by making more parts common to the operating system (from there they become accessible to all applications) and by making smaller and more versatile programming tools, the artificial joins between word processors, spreadsheets and databases will disappear.

JAPANESE DESIGN

If you can't operate your VCR, what hope have you operating a computer? The basic functions of a VCR are simple: yet I haven't seen one which I could describe as easy to use. Why? There are two reasons: complication with unnecessary features, and poor control design. There have to be many more controls on a modern word processor than on a VCR: so the ergonomic design of a word processor is even more important than that of a VCR, and much harder. Rightly, our users complain if they have the smallest difficulty operating our programs, and constantly we feed this back into the design. I wonder if the Japanese do this with their electronic equipment? There's not much evidence of this: VCR controls improve so slowly.

AMERICAN DESIGN

There's certainly no weakness in the marketing of the software produced by the big American companies, nor do their programs lack features or ability. The control design is the weak point: the marketing dictates that the more knobs, dials and buttons the better. The American view is: blow elegance and simplicity, they'll buy it because if it's got a rotate picture option and the rivals haven't (yet), it must be better.

So I think we can improve on Word and Excel, not by adding more features, but by design. Convincing buyers of this is even harder than getting the design right.

FIREWORKZ

The Fireworkz project is the current manifestation of all our thinking: it must do what is expected, it must be simple to operate, it must be available on different computers, it must work properly in the graphics world, and it must integrate tightly, if that's what you want. The development of PipeDream has continued over seven years or more, and I expect Fireworkz to last as long. The process of finding out what users want and improving the program to do it is endless. When we release the first version, we already have a wish list of improvements, and it grows all the time. Then we have to decide on priorities, and schedule the next major releases and improvements.

I think many users are unaware of this process of development, and that they can play a part in it if they want to. You can write to your software creators and tell them what you need. They might even agree! And when you buy a piece of software, consider not only what it does today, but also the track record of the writer on upgrades and improvements: if the software's any good, I bet you'll be using it for longer than you think.

Be prepared to pay something for major upgrades too: often the work that's been put into the new version is as much as writing the very first version. To counter this: if your current program satisfies you completely, why do you need to upgrade? However, if you use your machine a lot, it is usually worth keeping up with new versions (RISC OS 3, ARM3 etc.).

We have a whole raft of improvements for Fireworkz in 1994. First, there's Fireworkz for Windows, in the first quarter of 1994. Then in the third quarter there's Recordz: completing the family set of the three major applications. And towards the end of the year, Fireworkz Pro, a Fireworkz including all three separates: Wordz, Resultz and Recordz. We've got some pretty snazzy new features on our 1994 hit list for the Fireworkz family too. But you'll have to wait a little longer to find out what these are.

SUMMARY

If you buy Fireworkz, I hope you don't need to use the manual.

Desktop C - Displaying Text

David Spencer continues his study of data presentation with a look at how to display text in a window.

The aim of this article is simple - to produce a set of functions which will display a block of text in a scrollable window, rather like an *Edit* window, but without the editing facilities. There are a number of uses of such a function. For example, many applications these days provide a help option that offers more information than can usefully be handled by the *Help* application. Such programs normally open up a window displaying the information as a piece of text. There are of course other programs that simply need to display text as part of their operation.

USING TXT

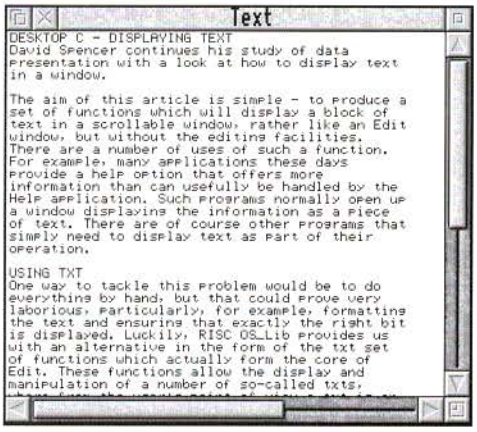
One way to tackle this problem would be to do everything by hand, but that could prove very laborious, particularly, for example, formatting the text and ensuring that exactly the right bit is displayed. Luckily, RISC OS_Lib provides us with an alternative in the form of the *txt* set of functions which actually form the core of *Edit*. These functions allow the display and manipulation of a number of so-called *txts*, where from the user's point of view a *txt* is an abstract object containing the text to be displayed. Within each *txt* is an active position marked by a pointer called the *dot*, and the text is automatically displayed so that the character at the *dot* is always visible. In an editable *txt*, the *dot* corresponds to the visible caret. Whilst the *txt* functions aren't the only way of solving the problem, they do provide a good balance between ease of use and unacceptably long code.

We'll look at using the *txt* functions in detail in a minute, but basically the functions that we must perform to display a *txt* are:

Create the *txt*
Ensure it is of the correct size
Load the text file into a buffer
Insert the text into the *txt*
Destroy the buffer
Open a window onto the *txt*
Handle scroll requests until the window is closed
Close the window
Destroy the *txt*

The reason we cannot load the text straight into the *txt*, is that its format is not defined. In particular, the text within a *txt* is split into non-contiguous sections - one before the *dot*, and one after it. Instead, we have to load the text into a buffer claimed using *flex* and then insert the text as a block into the *txt*. This does have the disadvantage that at least twice as much spare memory as the size of the text file is needed during the loading.

One problem not mentioned above, but which becomes apparent when coding the functions is that most *txt* operations insist on stealing the input focus and displaying the caret each time they do anything. As our window will only display text, and not allow it to be edited, this would be confusing. We therefore need a mechanism to prevent this, and this is described when we look at the functions in detail.


Text
DESKTOP C - DISPLAYING TEXT
David Spencer continues his study of data presentation with a look at how to display text in a window.
The aim of this article is simple - to produce a set of functions which will display a block of text in a scrollable window, rather like an Edit window, but without the editing facilities. There are a number of uses of such a function. For example, many applications these days provide a help option that offers more information than can usefully be handled by the Help application. Such programs normally open up a window displaying the information as a piece of text. There are of course other programs that simply need to display text as part of their operation.
USING TXT
One way to tackle this problem would be to do everything by hand, but that could prove very laborious, particularly, for example, formatting the text and ensuring that exactly the right bit is displayed. Luckily, RISC OS_Lib provides us with an alternative in the form of the txt set of functions which actually form the core of Edit. These functions allow the display and manipulation of a number of so-called txts,

Displaying text in a scrollable window

THE TXT FUNCTIONS

There are too many functions provided by the *txt* module to describe them all in detail here. Instead, only the ones we need for our application are described. The remaining functions are mentioned in passing only, but full details can be found in the *ANSI C* user guide.

Listing 1 is a source file containing two exported functions - *showtext_init()* and *showtext_display()*. These functions can be compiled separately and then linked into a complete program, providing a suitable *showtext.h* header is also included to provide prototype declarations for the two functions.

showtext_init() takes no parameters and returns no results. It should be called once before calling *showtext_display()*. The only action this function takes is to call *txt_init()*, which initialises the remainder of the *txt* functions. *txt_init()* must be called before any other *txt* functions, but after calling *flex_init()*.

showtext_display takes two parameters - the first a pointer to the filename to load, and the second a pointer to the title to use in the window. If for any reason the text cannot be loaded and displayed, the function returns FALSE. Otherwise, the function waits until the window is closed (processing Wimp events in the meantime) and then returns TRUE.

The first thing *showtext_display()* does is to use OS_File 17 to find the length of the text file. Assuming the file is found, *txt_new()* is called to create a new *txt* object. This call is passed the title for the window and returns an object of type *txt* which is a handle used for all future references to the newly created *txt*. Zero is returned if the *txt* could not be created.

Next, *txt_setbufsize()* is called to ensure that the *txt* is able to hold the total number of characters in the file. Although this call reserves memory for the text, the *txt* at this point still doesn't contain any characters. Assuming everything is alright, *txt_eventhandler()* is called to install a handler for events from our *txt*, and *txt_show()* is used to actually open a window onto our *txt*.

The event handler for a *txt* receives key presses, non-menu clicks and actions such as scroll and close requests. In our case, only this latter group are important. Close requests result in the *txt* being hidden and the done flag (a pointer to which is passed to the handler) being set. Scrolls up and down by a line use *txt_movevertical()* to move the position of the dot by one line, automatically coping with scrolling to the correct place, whilst scrolls by a whole page first use *txt_visiblelinecount()* to find out how many lines are visible, and then scroll by one less than this figure, using the same method.

Having opened the window, a block of memory is claimed using *flex*, the text is loaded into it and then copied into the *txt* using *txt_replaceatend()*. This deletes a specified number of characters from the end of the *txt* and replaces them with a certain number of new characters. In our case no characters are deleted, and all of the loaded text file is inserted. Once the text has been inserted the flex block is freed. Before the text is inserted, the current caret position is read and afterwards this is written back, together with a call to *txt_setcharoptions()*, which controls various aspects of the txt window, to lose the caret. This is needed to prevent our window from gaining the caret unnecessarily.

The function then sits in a loop calling *event_process()* until the done flag is set by our event handler, at which point the *txt* is destroyed and the function returns. A similar fudge with the caret is used here, but this time it is only returned to its previous owner if our window has claimed it. Without this extra bit it would be impossible for any other windows to gain the caret! Incidentally, because the function calls *event_process()*, it is possible for it to be called again whilst still executing. This is perfectly legal and allows several different *txt* windows to be open at once.

One point worthy of note is the error handling. At any point after the *txt* has been created, it must be destroyed before returning when an error occurs. As this can happen at several points, only a single error exit route is provided, and 'goto' used to jump to it. Some people may cringe at this, but all but the most fanatic theorists will agree that this is a legitimate use of the dreaded four-letter command.

Other functions provided by *txt* include a range of insertion and deletion operations to insert characters and strings, replace strings and delete blocks of text. There are also functions for placing markers at points in the text and selecting areas of text.

MORE ADVANCED OPERATIONS

RISC OS_LIB also provides more advanced text handling operations for actual text editing, and these may form the topic of a future *Desktop C* article. In the meantime, this month's magazine disc contains the *showtext* functions incorporated into a complete program that displays a text file in a window.

Listing 1. The showtext source code

```
/* showtext.c */

#include "wimp.h"
#include "wimpt.h"
#include "event.h"
#include "kernel.h"
#include "txt.h"
#include "flex.h"
#include "akbd.h"

#define Osfile_Readinfo  17
#define Osfile_Load      255

/* Initialise the ShowText functions */
void showtext_init(void)
{
  txt_init();
}

/* Event handler for text routines */
```

```
static void txt_event(txt text,
                      void *handle)
{
  txt_eventcode event;
  int visible, move;

  event = txt_get(text);
  switch (event)
  {
    case txt_EXTRACODE + akbd_Fn +127:
      /* Close */
      txt_hide(text);
      *((int *)handle) = 1;
      break;

    case txt_EXTRACODE + akbd_Sh +
         akbd_Ctl + akbd_UpK:
      /* Scroll up a line */
      txt_movevertical(text, -1, 1);
      break;

    case txt_EXTRACODE + akbd_Sh +
         akbd_Ctl + akbd_DownK:
      /* Scroll down a line */
      txt_movevertical(text, 1, 1);
      break;

    case txt_EXTRACODE + akbd_Sh +
         akbd_UpK:
      /* Scroll up a page */
      visible=txt_visiblelinecount(text);
      move=(visible >= 1) ? visible-1 : 0;
      txt_movevertical(text, -move, 1);
      break;

    case txt_EXTRACODE + akbd_Sh +
         akbd_DownK:
      visible=txt_visiblelinecount(text);
      move=(visible >= 1) ? visible-1 : 0;
      txt_movevertical(text, move, 1);
      /* Scroll down a page */
      break;

    default:
      break;
  }
}

/* Display a text file in a window */
int showtext_display(const char *text,
                     const char *title)
{
  _kernel_osfile_block block;
  int size, res, done = 0;
  txt ourtext;
  char *buffer;
  wimp_caretstr cstr, cstr2;

  if (res=_kernel_osfile(Osfile_Readinfo,
      text, &block), res == _kernel_ERROR
      || res == 0)
    return FALSE;
  else
    size = block.start;

  ourtext = txt_new((char *)title);
    if (ourtext == 0)
      return FALSE;

  if (!txt_setbufsize(ourtext, size))
    goto error;

  txt_eventhandler(ourtext, txt_event,
                   (void *)&done);
  txt_show(ourtext);

  if (!flex_alloc((flex_ptr)&buffer,
                  size))
    goto error;

  block.load = (int)buffer;
  block.exec = 0;
  if (_kernel_osfile(Osfile_Load, text,
             &block) == _kernel_ERROR)
    {
      flex_free((flex_ptr)&buffer);
      goto error;
    }

  wimpt_noerr(wimp_get_caret_pos(&cstr));
  txt_replaceatend(ourtext, 0, buffer,
                   size);
  flex_free((flex_ptr)&buffer);
  txt_setcharoptions(ourtext,
                     txt_CARET, 0);
  wimpt_noerr(wimp_set_caret_pos(&cstr));

  while (!done)
    {
      wimpt_noerr(wimp_get_caret_pos
                  (&cstr));
      event_process();
      wimpt_noerr(wimp_get_caret_pos
                  (&cstr2));
      if (cstr2.w == (wimp_w)
          txt_syshandle(ourtext))
        {
          txt_setcharoptions(ourtext,
                     txt_CARET, 0);
          wimpt_noerr(wimp_set_caret_pos
                      (&cstr));
        }
    }

  txt_dispose(&ourtext);

  return TRUE;

error:
  txt_dispose(&ourtext);
  return FALSE;
}
```

NOW! POEM 500 CNC SEWING MACHINE + ARC EMBROIDERY

The POEM 500 CNC embroidery machine, combined with TechSoft's Arc Embroidery software, offers a whole new sewing experience for students.

POEM 500

Unlike conventional machines, POEM has been designed from scratch to sit beside a computer. It is simplicity itself to operate, no buttons to press or settings to adjust, everything is controlled automatically. Just load the thread and the material, and go!

Arc Embroidery

With years of experience of designing CNC systems for schools, TechSoft have designed Arc Embroidery to have comprehensive features, while being very simple to use. Either a Sprite or Draw file may be loaded, scaled and positioned. Then, built in or user defined styles (ribbed, zigzag, satin stitch, etc.,) may be assigned to the different colours. Our unique stitching algorithms ensure unrivalled quality of output.

Technical: *Max stitching area 90 x 90mm : Max speed 300 stitches per min : RS232 interface : Supplied with large sewing frame, small frame available as an option : Sews on a wide range of materials : Optional thread stand for large bobbins available : 1 year parts and labour warranty.*

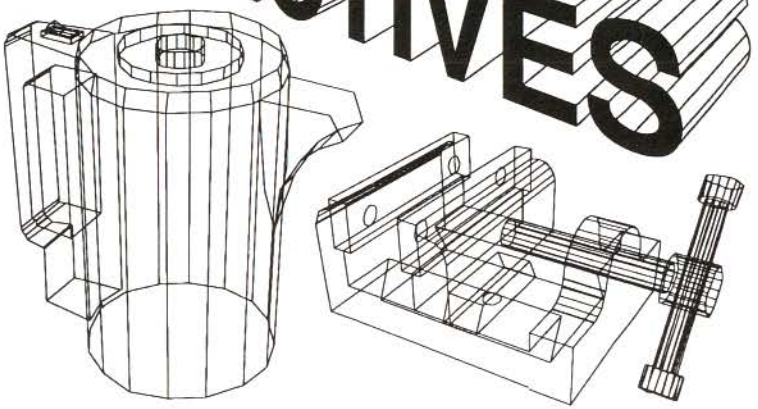
POEM 500 + Arc Embroidery (inc. site licence) + lead - £749 + £12.50 p&p +VAT

TECHSOFT UK Ltd., Old School Lane, Erryrys, Mold, Clwyd, CH7 4DA Tel: 082 43 318 Fax : 082 43 564

CNC SEWING FOR ARCHIMEDES

PERSPECTIVES

WITH STEREO 3D VIEWER!



Perspectives provides a simple means to interactively explore the concepts of 3D design. The drawing screen shows three orthographic (1st or 3rd angle projection), and a pictorial window. The pictorial view may be in perspective, isometric, or oblique (the perspective view can also be rotated/ zoomed to any view point). Drawing takes place in any orthographic window. A wide range of drawing and transformation tools are available. All views are active, allowing real time generation of 3D objects. A special viewing mode allows rotation of objects in full STEREO 3D, for a spectacular aid to visualisation. Output of all, or any individual view, is via a RISC OS printer driver, an HPGL compatible plotter, or as a Draw file.

Perspectives runs on any Archimedes. Single Copy £55 + VAT
A colour monitor is required for stereo. Site Licence £95 + VAT

TECHSOFT UK Ltd., Old School Lane, Erryrys, Mold, Clwyd, CH7 4DA Tel: 082 43 318 Fax : 082 43 564

3D CAD FOR THE ARCHIMEDES

Colour Card Gold

Mike Williams takes a look at Computer Concepts' latest release of its colour graphics card, the Colour Card Gold, which can provide over 32,000 colours on the Desktop.

The latest implementation of Computer Concepts' Colour Card (called *Colour Card Gold*) is able to support screen modes offering 32,768 different colours on the Desktop. High resolution colour graphics cards for the Archimedes range (from Computer Concepts and State machine) were first demonstrated in the autumn of 1992 and reviewed in RISC User 6:3. Much of what we said then still applies, and readers are referred to that issue for more background information. Here we shall concentrate on what is different with Computer Concepts' latest card system, and highlight what can be achieved once the colour card is installed.

A number of updates have taken place since colour cards first appeared, culminating late last year with a new card from Computer Concepts called Colour Card Gold. Since the original colour cards were released, Acorn has made RISC OS 3 generally available to all Archimedes

The FlipTop application shows all the modes available with Colour Card Gold.

users. RISC OS 3 already has increased support for higher resolution graphics, and many current Desktop applications (including Draw but not Paint) can already take advantage of this, provided the hardware is there to support it.

A major extension provided by Colour Card Gold is support for a 16bpp (bits per pixel) Desktop. Thus all the benefits of modes supporting 32,768 colours can be enjoyed from within the Desktop environment, and not, as previously, restricted only to use outside the Desktop. All of the software to support Colour Card Gold is now in EPROM - there is no longer any need to load modules from disc. You merely need to configure your system as detailed in the installation guide and everything is ready.

Examples of the quality of images achievable with Colour Card Gold

There is one important point all potential purchasers and users should note. The Colour Card provides a 15 pin D-type connector for linking to your monitor. My Taxan 775 uses a

9-pin connector. No problem I thought and borrowed a standard 9-to-15 pin adaptor from the office. Consternation! I could get no Colour Card modes displayed at all on my home-based A400/1 machine, and there were nearly as many problems with my office based A5000 (and Taxan 775 plus). A call to Wild Vision (who designed and support the CC Colour Card) quickly resolved the problem. Yes, you do need an adaptor, but not any adaptor. It must be one tailored to your monitor, which Wild Vision will supply free of charge (and very speedily too). With the new adaptor all was well, though a few modes still induce a degree of flicker. However, the choice is so wide, that this is unlikely to present a problem.

To be fair, the Colour Card pack does include information about the use of an adaptor, but doesn't really make it clear that a special version is needed. Hopefully, other potential purchasers will be forewarned in this respect. I might add that some information I have seen on this in other magazines is misleading, and implies that there are much worse problems than is actually true.

As before, Colour Card Gold is accompanied by the *FlipTop* and *Clearly* applications for selecting Desktop modes and displaying Clear images in 16-bit modes. There is also a version of Acorn's Replay movie player which has been upgraded to work correctly in all Colour Card screen modes. While Paint will not work (in its current version) in any of the new 16bpp modes, many other applications will. Sprites can always be displayed and printed by dragging them into Draw, or any other application which does work, Ovation for example. And it goes without saying that all the latest versions of CC's own software will work in a 16bpp Desktop, and support 24-bit graphics with a Colour Card fitted. Even in 16 and 256 colour modes, users can choose from 16 million possible hues. I have also used Colour Card Gold in conjunction with Spacetech's *Weather Desk*, which not only benefits from the high quality graphics when possible (the Weather Desk provides full support for 24-bit graphics), but also from the improved processing speed that results when all the screen support is provided through separate hardware. Indeed, Spacetech strongly recommends the use of a colour card in its documentation.

PRODUCT INFO

Product	*Colour Card Gold*
Supplier	*Computer Concepts* *Gaddesden Place,* *Hemel Hempstead,* *Herts HP2 6EX.* *Tel. 0442 63933,* *Fax 0442 231632*
Price	*£249 ex. VAT*

EPROM upgrades to Colour Card Gold for existing Colour Card owners cost £17 ex. VAT.

SUMMARY

Acorn is widely believed to be working on the next machine in the Archimedes range (release anticipated sometime this year), and this is expected to provide support for 24-bit colour. This is essential for high professional quality work in graphics, DTP etc. Cards such as the Colour Card Gold from Computer Concepts, provide similar capability now, and there is an increasing choice of software which is already designed to take full advantage of 24-bit colour as soon as it appears.

Colour cards will allow users of existing Archimedes systems to upgrade their hardware to keep abreast of new developments. By doing so now, users gain from a much greater choice of screen modes, the facility to use a 16bpp Desktop with 32,768 colours now, and to get the most from software such as CC's ArtWorks which are designed to take advantage of 24-bit colour where available. The use of a colour card also boosts the performance of any Archimedes, by handling screen updating and refresh which would otherwise be done by the main processor using main memory. Thus higher performance is possible allowing the use of higher resolution screen modes (or larger Desktops) in circumstances which would otherwise produce unacceptably degraded performance.

With the improvements and extensions which CC has built into Colour Card Gold I do recommend anyone for whom graphics is a high priority to consider this as an upgrade to their system. Of course, another option is to wait for Acorn to release a new machine and upgrade your entire system then, at a price, but why wait when you can have some of the benefits now?

Font Directory is the only font management application which contains a dedicated font filing system. All other programs work by simply swapping whole directories or moving font files from one folder into another.

Although writing and desiging a font filing system has taken more time and effort, it offers some additional benefits...

• **More flexibility** – Individual fonts (not just families or directories) can be installed and removed. You can also organise your fonts into categories, families and weights.

• **Saves space** – By using directories which only take up 2K, the space used by your font collection can be reduced.

• **Kind to discs** – Unlike some systems, font availability is controlled in memory and not by moving font files on the disc. This saves a lot of unnecessary disc access and speeds up the availability of your fonts.

• **No limits** – Well, not exactly... you can store over 5900 font families! And you can make many of these fonts available at any one time – typically over 700 font families.

• **Network friendly** – A special version of the software is available for network users. This allows each station to have a personal view of a central collection of fonts stored on a file server.

• **Star commands** – If required, star commands are provided to allow you to specify which fonts should be made available.

• **RISC OS compliant** – It works with both RISC OS 2 & 3 and is desktop compliant. As registered developers, the calls and messages provided are officially recognised by Acorn.

• **Well documented** – It comes with a 32-page printed manual which includes both a primer and a detailed description of the facilities provided.

• **Reviewed** – Here's what the reviewers say:

RISC User, Jan/Feb '94: *"This program provides the kind of facilities which should have been built into the operating system in the first place. It is very easy to use, and I find it utterly invaluable. Anyone who has more than a handful of fonts should buy it without delay. It is superbly presented, operates flawlessly, and has become a permanent addition to my iconbar."*

Archive, Sept '93: *"The real pièce de résistance is the facility to scan documents and files and install the fonts required automatically. This is a dream to use. I have always found it frustrating that Impression would simply replace all uninstalled fonts with Trinity without even giving the option to abort loading the document. Draw would replace unrecognised fonts with the system font. Now that is all a thing of the past.*

I was very happy with Font Directory. I found it very easy to install and use with minimal reference to the manual... this is a highly intuitive application – a great deal of care and thought must have gone into its design and realisation. It integrates seamlessly with RISC OS and if you use a lot of fonts, you have to have Font Directory."

LOOK systems

Font Directory

A font filing system

Hundreds of outline fonts are now available for the Archimedes and new fonts are being produced all the time. This is all very well, but it does mean that using and managing fonts is becoming increasingly difficult.

What is Font Directory?

Font Directory is a radical approach to storing and using outline fonts within the RISC OS desktop. At its heart is a dedicated font filing system which provides the user with an unparalleled level of control.

Easy-to-use

Using techniques pioneered by LOOKsystems, Font Directory allows you to install fonts at the click of a button without the having to restart your application.

Just select the fonts in the FontList window and click on the 'tick' icon.

(If you wish, you can specify which fonts will be available on start-up and save favourite lists of fonts for later use.)

Font viewer

A preview window is available to help you decide which fonts you wish to install or just to remind you what a particular font looks like. If required, the text, size and colours used to display a font can be defined and even saved for later use.

Document scanning

The most powerful feature, however, has to be the ability to scan other applications' documents. When a document is dropped onto Font Directory, the fonts used will be made instantly available.

At last, no more 'font not found' errors!

FREE trial offer

Font Directory does a lot more than we can explain on a single page and so we are offering you the opportunity to try the software for free.

Just contact us at the address below and we will send you a complete pack. This can be returned within 10 days and you won't be charged a penny.

Otherwise, you can keep the software and we will invoice you for £35 inc VAT and UK P&P.

This offer only applies to UK residents.

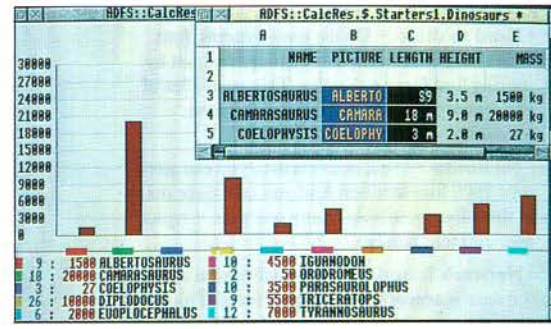
LOOKsystems, 47 Goodhale Road, Bowthorpe, Norwich, NR5 9AY.
Telephone: (0603) 748253. Facsimile: (0603) 764011.

A hard disc is recommended and you will need enough space to store all of your fonts. Most major applications and file formats are supported.

Education: Key Moves Part 1

Chris Drage examines Anglia TV's substantial output for the educational market.

Anglia TV's *Key* series is a fully integrated suite of software tools designed to enable children to handle data effectively from the age of eight upwards. Central to the series are *Key Plus* (a relational database system for secondary aged pupils), *Key Note* (the primary version), and *Key Calc* and *Key Count* (respectively spreadsheets for secondary and primary pupils). These four programs form the hub for a whole gamut of other data related software and supporting data files and maps. *Key Author*, a multimedia application, provides a useful addition allowing children to present information in even more imaginative ways.


ADFS::CalcRes
ADFS::CalcRes.$.Starters1.Dinosaurs
A B C D E
NAME PICTURE LENGTH HEIGHT MASS
ALBERTOSAURUS ALBERTO 9 m 3.5 m 1500 kg
CAMARASAURUS CAMARA 18 m 9.0 m 28000 kg
COELOPHYSIS COELOPHY 3 m 2.0 m 27 kg
9 : 1500 ALBERTOSAURUS
18 : 28000 CAMARASAURUS
3 : 27 COELOPHYSIS
26 : 10000 DIPLODOCUS
6 : 2000 EUOPLOCEPHALUS
10 : 4500 IGUANODON
2 : 50 ORODROMEUS
10 : 3500 PARASAUROLOPHUS
9 : 5500 TRICERATOPS
12 : 7000 TYRANNOSAURUS

Key Calc spreadsheet

Key Plus maps

Each element of the software is able to share data, and where relevant (Key Plus/Key Author) is able to utilise and control Replay movies, sound samples and Laservision players. Acorn's Archimedes and emerging CD technology have enabled Anglia TV to develop the series to a point where it now adds up to a highly successful system for budding scientists, geographers and historians. From its instigation in 1987, the Key series has always complemented ITV's School service - one of the reasons for its comprehensive selection of off-the-shelf data files, designed to support the broadcasts. It was perceived even then that television and computers were moving into an increasingly interactive role. The underlying philosophy is to produce data which pupils can search, sort and plot. From this experience they can go on to develop their own data files, thus combining an understanding of information analysis and information technology - as relevant today as it was in the late 1980s.

KEY NOTE

Key Note offers an introduction to what is a consistent data retrieval and analysis system. Lacking many of the sophisticated features of Key Plus, it offers a friendly approach using icons. The ability to configure the program to suit younger children helps it meet the requirements of primary data handling well. In addition to the usual means of output, results of searches in Key Note can be plotted onto Key maps (using longitude and latitude) or onto any graphic image created via the optional Key Distribution, using co-ordinate plotting. Alternatively, areas of maps and graphic images displaying plots can be selected, and records represented by the plots can be searched and analysed. Key Note can work on any Key Plus data file, and even allows data capture sheets based on these files to be printed out. The program offers a logical vehicle for introducing Key Plus.

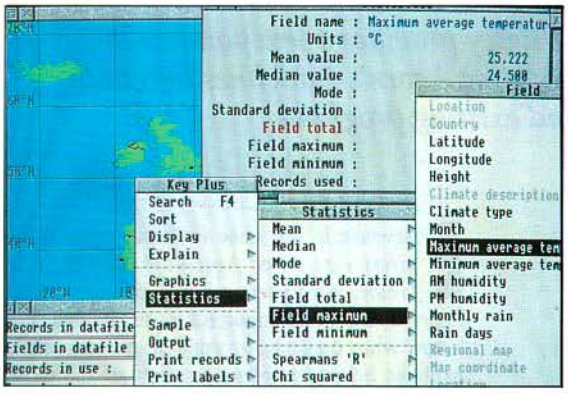
THE KEY PLUS FAMILY

Key Plus is the flagship database manager of the suite, and its potential in the area of mapping was realised very early on. Since then there has been an ever increasing range of maps available for use with it. *Key Plus Maps* works with any K.P. data file containing locations in latitude and longitude. Such data is plotted automatically onto the map, including that of subsets found during searches. Features like rivers, physical features and political boundaries can be switched on or off, and the results exported to other programs like Key Author, and other applications. With the emergence of CD-ROM based data files, a vector mapping system based on Bartholomew's maps - the *Counties of Britain* CD-ROM data file - should prove most useful as there will be a detailed map of each county included.

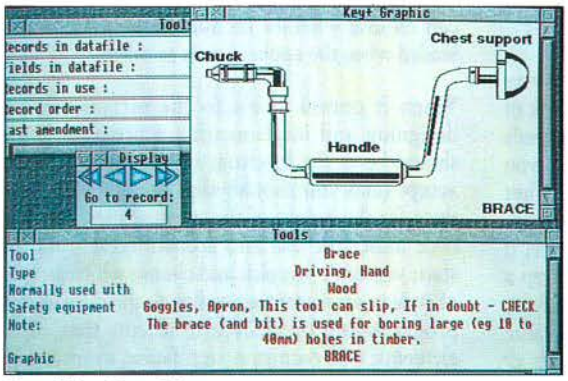
To enhance the mapping system further, *Key Plus Distribution* enables the setting up of choropleth or distribution maps, and permits maps with regions such as local electoral wards or any other division related to statistical data to be plotted - ideal for local census statistics, results of opinion surveys, housing across the district or animal life in an area like a school garden. Key Plus can even run in alternative languages (French, German, Welsh, Spanish are currently supported) and has a very good range of statistical and graphing tools, making it an ideal vehicle for data handling activities in history, geography and science at the secondary level.

Recognising the importance of spreadsheets for opening up a range of opportunities for mathematical modelling, historical investigation, or geographical recording, Anglia TV added Key Calc and Key Count to the suite, each one sporting features appropriate to its intended users. The former includes sorting, macro and graphing facilities, and can store pictures and maps in sheets. Like Key Count, it will accept Key Plus or Key Note files directly. Key Count resembles Key Note in its more limited range of facilities, is icon driven and is fully configurable to suit individual needs. It, too, can store pictures, and has a range of graphing options. A selection of starter ideas is included inviting the child to explore the spreadsheet through a series of predefined tasks and icons.

control Laservision and CD-ROMs. Naturally, it can accept Key Plus data files. One feature worth noting is Key Author's powerful glossary system which takes the concept of a glossary into animation and illustration.



Key Plus statistics



Key Plus Graphics

Although, to the uninitiated, the Key data handling system looks a closed shop, this is simply not the case, and with every program at every level data can be imported and exported in commonly used formats e.g. CSV, SID, sprites, Draw files and plain text.

As I said at the outset, Anglia TV sees the coming together of television and computers as providing an interactive medium as an important development for the future. With this process in mind Anglia has launched a number of CD-ROM based data files: *19th Century Biographies, Understanding The Body, Castles, Countries of the World, Counties of Britain and WWII: The Home Front.* These are all appropriate National Curriculum titles containing animations, sound clips and movies in addition to text and still pictures. At between £25.00 and £40.00 per disc they certainly represent excellent value for money. In Part Two I shall investigate the potential of both these resources together with other key data files and their relevance to data handling in the educational context.

KEY AUTHOR

Key Author lies somewhere between Oak Solution's Genesis and Longman Logotron's Magpie. It lacks the scripting language of the former but has more features than the latter. The idea behind Key Author is that it integrates pictures and text, sound and video for teacher's and pupil's own presentations. It accepts Tween animations, Replay video and can

PRODUCT INFO

Product:	*Key Plus, Key Calc, Key Note, Key Count and Key Author are available from*
Supplier:	*SCA (Anglia TV), PO Box 18, Benfleet, Essex SS7 1AZ. Tel./Fax 0268 755811*
Prices:	*Key Plus £60.00* *Key Plus Maps £22.00 each* *Key Calc £60.00* *Key Gazetteers £7.50 - £22.00* *Key Note £27.50* *Key Data files £15.00 - £22.00* *Key Count £32.50* *Key Author £55.00* *All prices exclude VAT.*

Putting on the Style

Alan Wrigley provides a few pointers to incorporating Acorn's guidelines into both new and existing programs

Elsewhere in this issue we have reviewed the latest version of Acorn's RISC OS Style Guide, which sets out the guidelines that Acorn considers are important for programmers to follow when designing an application. This article explains how to implement a few of the more important guidelines. It should not be considered as a substitute for the Style Guide, however, and you are strongly recommended to get a copy.

As well as programs which you may write yourself, it is often possible to improve the look of existing software by modifying an application's templates using Acorn's FormEd. This way you can add 3D effects, caret pointers and other elements from the latest guidelines into software which does not already have them. However, if you do this, make *absolutely sure* that you keep a copy of the original template file before modifying it, since in some cases the modification will cause the application to fail (see this month's *Hints & Tips* for further information).

Most programmers are now aware of the need for a degree of conformity when writing Wimp-based programs for RISC OS computers. Garish scroll bars and clever tricks with the mouse buttons are no longer revered as the hallmark of individuality, and thank goodness for that. But there is much more to the guidelines than this. Many people buying a computer nowadays have had no previous experience of using one, and if they are to persevere and continue to support Acorn it is vital that the software they use should be consistent. Controlling windows and mouse buttons, saving documents, making choices from menus and dialogue boxes, using keyboard shortcuts and so on, should all become second nature very quickly, and users should have complete confidence that any new piece of software they encounter will behave in the same way.

Many of the basic elements of recommended style have been described over the years in RISC User. There are few programmers who don't know how to create an application directory and the basic resources needed by an application, such as sprite files or templates. One important resource that many are still unsure of, however, is the Messages file. This file contains all the textual messages which might be displayed by the program during its execution, and is vital if programs are to be converted easily for use in foreign languages. This subject was covered in RISC User 5:9.

Another resource all too often omitted, but which Acorn is very keen to promote, is interactive help. This was described in *Wimp Topics* (RISC User 7:2). Interactive help can speed up the learning process significantly and quickly makes the user feel more at home with a piece of software, thereby achieving the same objectives as other aspects of style. You should always consider including it in your programs; if the help messages require a lot of memory you could provide a configuration option by means of which the user can choose whether or not the help facility is loaded when the application is installed.

When it comes down to the nitty-gritty of designing and implementing a program, style should be at the forefront of your mind. If you accept (and you should) that the guidelines are there for the benefit of the eventual user, then the code must take this into account right from the start; you can't just pick and choose which aspects of style to implement according to the difficulty of programming them. Acorn accepts that some elements will require a significant overhead in terms of program complexity, but nevertheless it is very desirable that you should make the effort. My own preferred way of working is to start with the window design. It's only when I'm satisfied with the look of the window, and the process by which the user interacts with it, that I start coding the routines to handle the interaction. In this way the code depends on the user interface, and not the other way round.

WINDOWS

The basic style guidelines for windows are well known: title bar and scroll bars in specified shades of grey, input focus highlighted in cream, and so on. One important new point relating to RISC OS 3 is the process of iconising a window. If the window in question is a document, then clicking Select on the Close icon with Shift held down should reduce the window to an icon and place it on the pinboard. This is important since it is a useful way of putting a document to one side without losing it, and most users will expect your application to do this.

If the window is a dialogue box, the style guidelines are quite specific about how it should look and act. Dialogue boxes are a very important part of the user interface and Acorn is rightly concerned that a common style should prevail. 3D looks much more attractive than the old 2D style, so it is worth incorporating 3D icons, especially since many users now have NewLook. However, you should consider allowing users a choice between 2D and 3D, and provide separate template files and sprites for each. To create a 3D icon, the border flag *must* be set, and the icon must be indirected with a validation string containing the R command followed by a number from 1 to 7. "R1" produces a raised slab icon, while "R2" produces a sunken icon and so on. In some cases (types 5 and 6), the icon background may change colour when clicked, and the colour can be specified as a second parameter (for example, "R6,11" would change the background colour to red when clicked).

Dialogue boxes have a standard set of components, any or all of which may be required in any particular case. There will usually be at least two action buttons. One of these should be labelled *Cancel* and have a validation string "R5,3" and a button type *Click*. This will result in a raised slab icon which will change colour when clicked. Clicking on *Cancel* should close the box without carrying out any action or altering any settings. There should also be a default action button with a meaningful label in the context of the box, such as *Save* or *Print*. It should also have a *Click* button type, but in this case the validation string is "R6,3", which produces an icon with a channelled border in order to identify it clearly as the default button; this means that it should also be activated by pressing Return in the dialogue box. There may be other action buttons depending on the situation. Action buttons should have a black foreground and grey (colour 1) background.

In contrast to the previous guidelines, movement from one writable icon to the next should only be by Tab or cursor keys, while pressing Return in any icon should activate the default action rather than just move to the next icon as before. I'm not entirely happy with this since there are many users who are familiar with the old way; although the new method does seem more logical, for a long time to come there will be some applications in circulation that treat Return in the old way and some in the new. This will cause the kind of confusion that the guidelines are designed to prevent. To ensure that the Tab and cursor keys are processed automatically by the Wimp and that Return is always reported to the task, you can use the K command in the icon's validation string, followed by the parameters t, a and r (see the PRM, or *Technical Queries* in RISC User 6:6, for a full explanation).

You should also arrange for the pointer to change its shape to a caret over any writable icons. This can be done by including the P command in the icon's validation string, followed by the name of an appropriate sprite for the pointer shape. Acorn provides such a sprite in RISC OS 3, called *ptr_write*. Validation strings for writables should therefore be "Ktar;Pptr_write". You will notice that this does not set them to be 3D; although Acorn has provided a 3D icon border (type 7) for editable fields, the guidelines do not suggest using it. In a window which is otherwise in 3D, I personally prefer 3D writable icons, and I'm not sure why Acorn has decided against it.

Where the user may alter values within a defined range, you should use adjuster arrows in conjunction with a writable icon. The adjuster arrows must always be in pairs (normally up/down arrows are used, but occasionally left/right arrows may be more appropriate). If you are using the 3D style, the arrows should appear to depress when clicked, so you must use text-plus-sprite icons with a validation string specifying two sprites, one for the deselected and one for the selected state. It must be unfilled with no border, and the validation string must also set the border to the action button type to ensure it changes state when depressed. For an up arrow the string would therefore be "R5;Sup,pup" (which uses sprites supplied by Acorn with NewLook). You could also use a slider bar where appropriate, either with or without adjuster arrows (for a description of how to implement a slider bar, see *Wimp Topics*, RISC User 7:3).

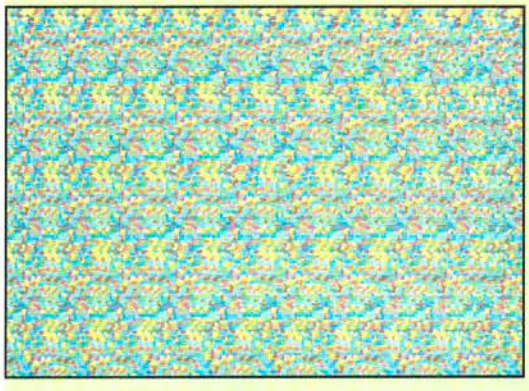
Radio and option buttons are well known by now, but there are still some programmers who use the wrong type. An option button is for a single option which can be toggled on or off, while a group of radio buttons is for a set of inter-related options of which only one can be on at any time. The members of any group are defined by having the same non-zero ESG number. Note that in some circumstances it is also possible for all options in a radio group to be turned off (an example being Edit's search/replace box). The Wimp allows this by deselecting the currently selected radio button if it is clicked with Adjust. If

Continued on page 53

RISC User Disc March

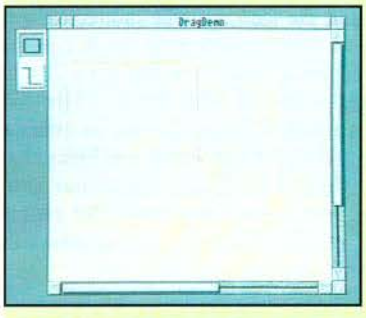
Includes new updated RISC User menu system with tabbing, Shift-Click to open any application, right-justified info boxes and a Help file cleaner. And it's more memory efficient.

DotScape



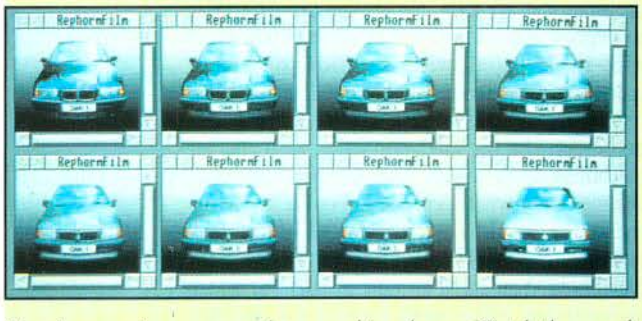
See our 3D image on screen without any artificial aids. And it works just as well if you print it out.

Drag Demo



This application provides a demonstration of dragging within a window as described in this month's instalment of *Wimp Topics*. Fully documented source code gives you the know-how.

Morphing Demos

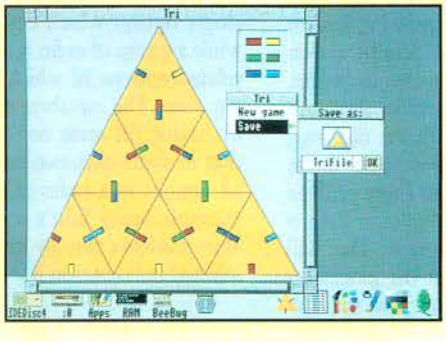


The disc contains two complete morphing demos. Watch them evolve with Ace Computing's PD *Projector* application. Both have been produced with Oak Solutions' *Rephorm* package reviewed in this month's magazine.

Just A Page

This month's program allows you to customise alternative boot sequences for DTP, games playing, or anything you choose.

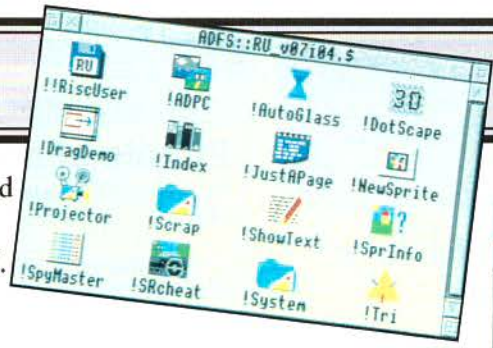
ADDITIONAL ITEMS DESCRIBED IN THE MAGAZINE



Triangulation Game

Tired of serious computing? Challenge your mind with *Tri*, a form of sliding block puzzle based on rotating and translating triangles to colour match their edges - one to exercise the brain cells.

1994



This action-packed disc costs just **£4.75** inc VAT.

(Please add £1 p&p)

BONUS ITEMS

New Format Sprite

Check out the new generation of sprites with this 32,000 colour sprite in Acorn's new format. Use it to test if your software works with the new sprites. With Computer Concepts Colour Card Gold you can even view it in Draw.

Extended Sprite Information

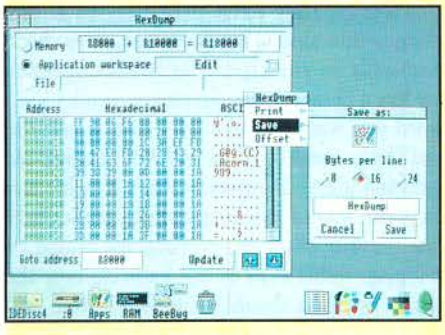
As a bonus, this utility can be used from the command line (or from within a program) to obtain information about all sprites currently known, including system sprites, Wimp ROM sprites, Wimp RAM sprites and user sprites. And it even tells you about Acorn's new format sprites in 32,000 or 16 million colours.

ShowText

This application contains the source and compiled C code for displaying text within a scrollable window.

ArcScan Data

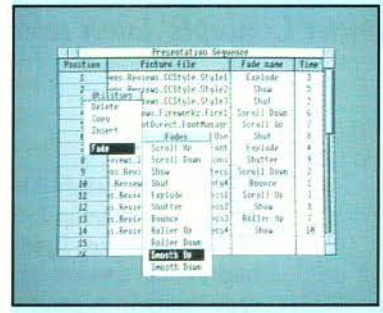
ArcScan Indexes for this month's RISC User and BEEBUG Vol.12 No.8.



SpyMaster

This excellent application provides an insight (literally) into any area of memory or file, by displaying the selected area in a scrolling window together with an ASCII interpretation - very useful for programmers and others.

ADPC

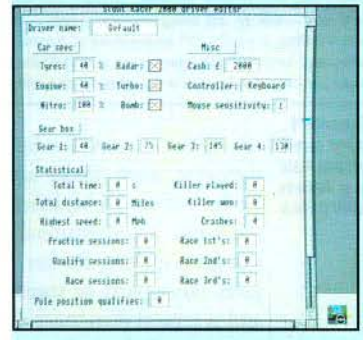


This is just what you need to create a professional display sequence. The *Advanced Desktop Presentation Creator* (ADPC) provides a variety of slick fade options from one screen to the next, now updated to work with mode 27 (and modifiable for other modes). Further improvements on the original (Volume 3 Special Disc) have also been incorporated.

AutoGlass

Use this application to provide your own programs with an hourglass display which you can control to show the passage of time over a predetermined period.

Stunt Racer 2000 Cheat



Do you find Stunt Racer 2000 too difficult for your driving skills? No problem - this application enables you to edit many of the game's starting parameters so that driving becomes a pleasure, not an impossible challenge.

WordWorks

Mike Williams finds some words for one of Computer Concepts' latest releases.

We have already referred to *WordWorks* in these pages in Richard Grant's review of *Impression Style* in RISC User 7:3. All Impression owners are being offered the opportunity to upgrade to Impression Style or Publisher at a very attractive price, and the upgrade includes WordWorks which is bundled in with both of these. However, WordWorks is also available for purchase in its own right. So what does it have to offer the Archimedes user, including those like myself who prefer alternative methods of DTP and word processing?

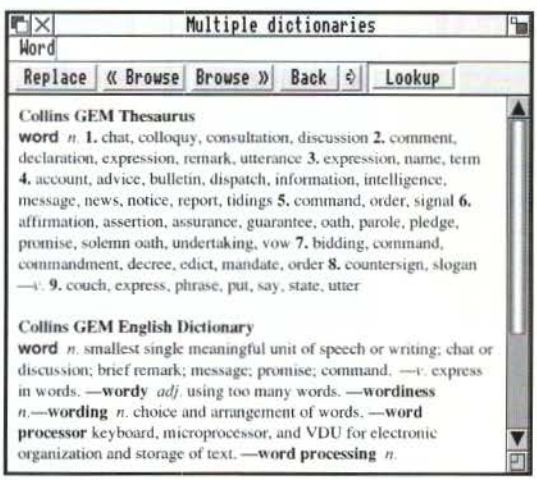

Multiple dictionaries
Word
Replace
« Browse
Browse »
Back
Lookup
Collins GEM Thesaurus
word n. 1. chat, colloquy, consultation, discussion 2. comment, declaration, expression, remark, utterance 3. expression, name, term 4. account, advice, bulletin, dispatch, information, intelligence, message, news, notice, report, tidings 5. command, order, signal 6. affirmation, assertion, assurance, guarantee, oath, parole, pledge, promise, solemn oath, undertaking, vow 7. bidding, command, commandment, decree, edict, mandate, order 8. countersign, slogan —v. 9. couch, express, phrase, put, say, state, utter
Collins GEM English Dictionary
word n. smallest single meaningful unit of speech or writing; chat or discussion; brief remark; message; promise; command. —v. express in words. —wordy adj. using too many words. —wordiness n.—wording n. choice and arrangement of words. —word processor keyboard, microprocessor, and VDU for electronic organization and storage of text. —word processing n.

Figure 1. Dictionary and Thesaurus entries from WordWorks

WordWorks provides both a dictionary and a thesaurus, using (under licence) those supplied by Collins in its GEM series. Moreover, it works more like a conventional dictionary: you don't just get a spelling checker, but a dictionary which gives other parts of speech for the target word, and a typical dictionary definition. This may or may not include single word synonyms, but in any case this is where the thesaurus comes in, giving (where they exist) a whole range of synonyms for the target word as expected. A typical result, using the target word *Word* is shown in figure 1.

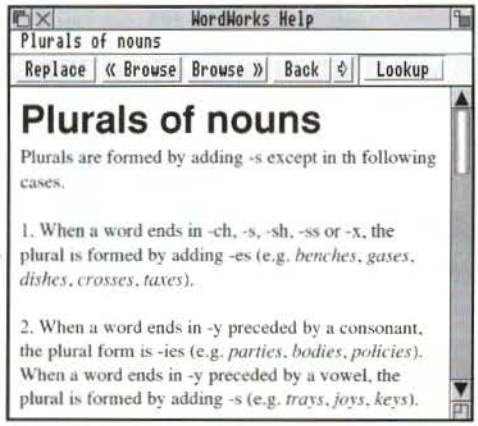

WordWorks Help
Plurals of nouns
Replace
« Browse
Browse »
Back
Lookup
Plurals of nouns
Plurals are formed by adding -s except in th following cases.
1. When a word ends in -ch, -s, -sh, -ss or -x, the plural is formed by adding -es (e.g. benches, gases, dishes, crosses, taxes).
2. When a word ends in -y preceded by a consonant, the plural form is -ies (e.g. parties, bodies, policies). When a word ends in -y preceded by a vowel, the plural is formed by adding -s (e.g. trays, joys, keys).

Figure 2. The same WordWorks window provides help on all its features

In operation, the target word is entered in the single line at the top of the window; clicking on *Lookup* then searches dictionary and thesaurus for the required information. You can also browse forwards or backwards through the dictionary looking at consecutive entries, and you can retrace your steps at any time with the Back option. The arrow to the right of this icon gives access to a complete list of all target words examined in a session.

The window can also be resized, with the text automatically reflowing to adjust to its width. And you can select the font and its size to suit your preferences. The main menu also allows you to choose whether to have both dictionary and thesaurus in operation or just one or the other.

PRACTICALITIES

As you might expect, I normally use *Ovation* and its built in spelling checker (sometimes RISC Developments' *Desktop Thesaurus* as well), and for other work, particularly with DeskEdit, I use David Pillings' *Spell*.

Both Ovation and Spell work differently to WordWorks; they exist primarily to check spelling within an existing document, or to check dynamically as you type. WordWorks operates more like a conventional dictionary; you look up a word you want to check by typing it into the WordWorks window (there is a hot key link for Impression users). In my view that's a rather less than useful way of checking spelling, particularly as the majority of my mis-spellings are caused by mis-typing, rather than by not knowing how the word in question should be spelt. Ovation and

Spell also highlight any unmatched word in context, and offer reasonably intelligent alternatives to unmatched words. Although WordWorks doesn't do this, the fact that you are looking up a specific word means that this will normally be in the context of some text.

Both Ovation and Spell also allow you to develop your own dictionaries to cope with a more personalised collection of words and names. WordWorks misses out here as well.

Where WordWorks really comes into its own is as a source of words and meanings. As such it clearly has the capacity to enhance and enrich one's use of the English language. It also offers a powerful facility whereby the entire dictionary can be searched for all entries containing any reference to a target word, rather than just the entry for that word alone.

Impression users have the added facility that double-clicking on a word in an Impression document inserts that word into WordWorks as the target, and selecting or marking any word in the WordWorks window, and then clicking on *Replace* will substitute for the original word that now selected. With other software, using the *Replace* option will also send the selected word to the window with the current input focus (this works with DeskEdit and Ovation), but words can only be entered into WordWorks manually.

Another alternative to WordWorks which is worth considering is *WordHound*, available as shareware. This provides a 33,000 word dictionary, and an implementation of Roget's Thesaurus. It also has hot key links with Impression. While its window displays are less slick than those of WordWorks, it provides many of the same functions, and others - for example, WordHound also allows fuzzy searches based on the first few characters of a possible word, and for searches which 'sound like' a given word (if you are not sure of the spelling). It also has numerous display options for showing in more detail relevant entries from its dictionary or thesaurus. Best of all, it only costs £5 to register once you decide to keep WordHound.

PERFORMANCE

You should be aware that dictionary and thesaurus utilities can be very memory hungry (and need anything from 2.5Mb to 3Mb of hard disc space). CC says that WordWorks can grab up to 2.5Mb of memory if you let it, but it can also be configured to use much less, loading data as required, although this will degrade performance slightly. WordHound appears to keep its data permanently on disc (it takes up about 2.2Mb), but this does not appear to retard performance to any noticeable extent.

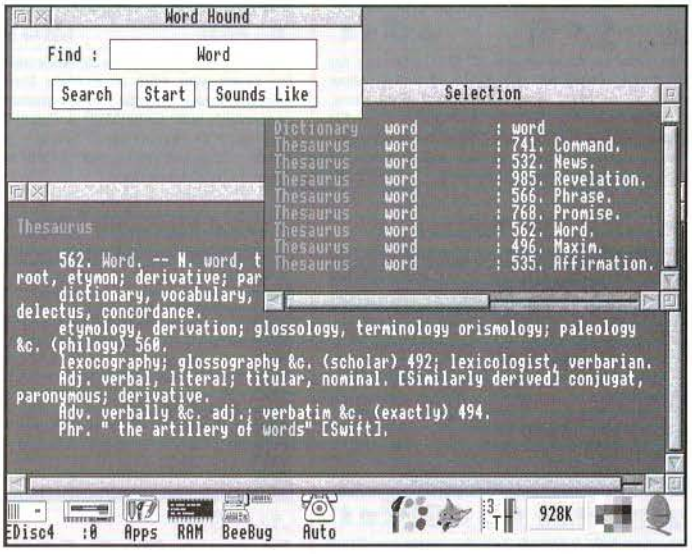


Figure 3. WordHound in use

CONCLUSIONS

If you are using WordWorks because it was bundled in with Impression Style or Publisher, it effectively comes for free. However, if you are considering WordWorks as a package in its own right, then for the price which CC are charging I would consider very carefully whether or not it will provide you with what you need in a convenient format. If you want nothing more than a spelling checker, then I suggest you look elsewhere (Spell, for example, which Word Hound does have). But if you want the many benefits (but by no means all - no etymological derivations, for example) of a conventional dictionary and thesaurus then WordWorks may be worth considering (but don't forget WordHound, or Desktop Thesaurus).

PRODUCT INFO

Product	*WordWorks*
Supplier	*Computer Concepts Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. Tel. 0442 63933 Fax 0442 231632*
Price	*£39 ex. VAT*

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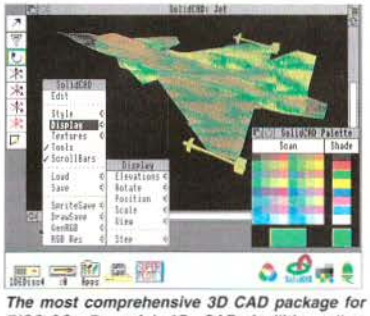

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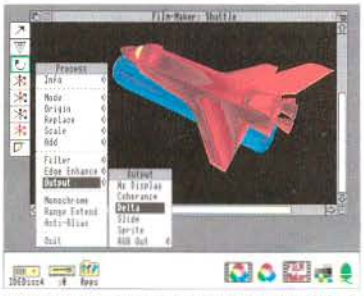

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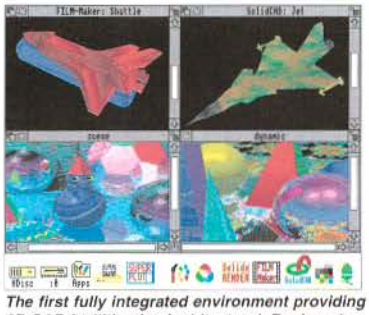

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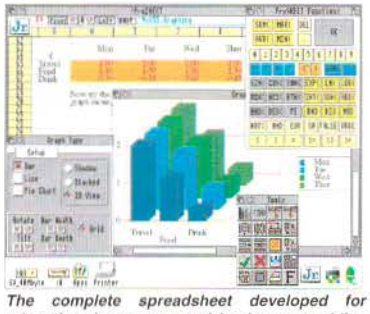

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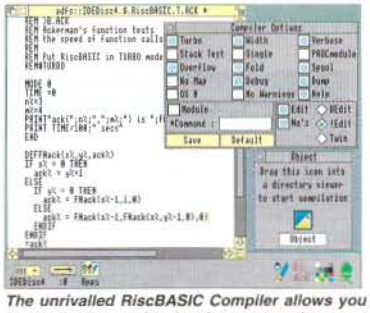
RiscBASIC™ Release 3.0



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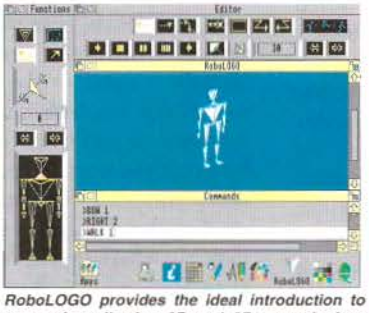

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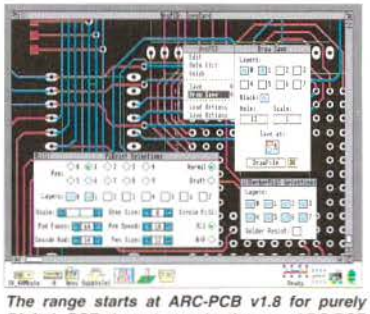

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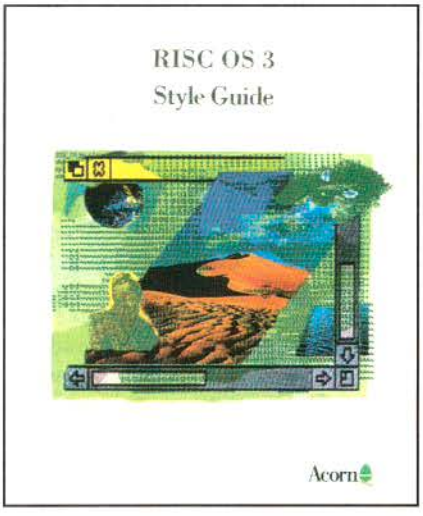
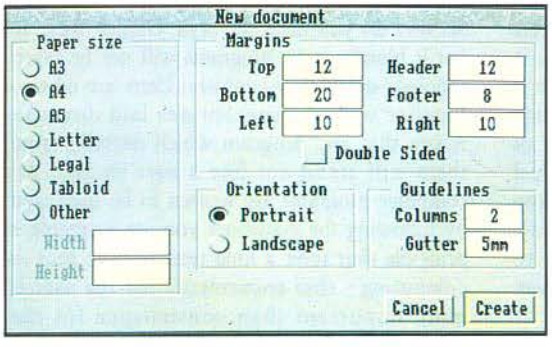
Style Counsel

Alan Wrigley looks at the RISC OS 3 Style Guide, and why you need it.

Back in the early days of RISC OS, many programmers were unfamiliar with Wimp environments. Most had graduated from older, single-tasking machines such as the BBC micro, where program style was very much down to the individual programmer. Each application had a different way of doing things, which involved a lot of relearning every time a new package was encountered.

In an attempt to ensure that this would not happen with RISC OS, Acorn was very keen right at the outset to establish a set of rules to govern the way in which applications interfaced with the user - how they should appear, how the user should request certain actions to be performed etc. These guidelines were initially published as a postscript to the Window Manager section in the Programmer's Reference Manual (PRM), and later enshrined in the RISC OS Style Guide. The basic idea behind the guidelines was that there is little point in providing an environment in which tasks can co-operate with each other, if the tasks themselves do not conform in the way they handle certain common functions such as saving files, keyboard input, operation of menus etc., or in the terminology they use when providing documentation.





A typical 3D dialogue box designed according to the latest RISC OS guidelines

Thankfully, most programmers appreciated the good sense of having a degree of conformity, and the guidelines were quickly accepted and implemented. However, RISC OS has evolved since then, and with it Acorn's perception of the way in which things should be done. The 128 pages of the RISC OS 3 Style Guide incorporate Acorn's latest thinking on the subject. It is supplied automatically when you buy a copy of the PRM, and is also available separately.

It is immediately clear that this is not just a minor update of the earlier Style Guide. Many of the detailed recommendations have been altered, and there is also full support for the 3D Desktop. Indeed, Acorn's decision to give away 15000 copies of NewLook at the Acorn World show indicates its determination to make the 3D look the future standard.

The new Style Guide has been laid out sensibly and thoughtfully. The entire booklet is clear and unambiguous, and while there is a lot of information, much of it is straightforward. Reading the guide from cover to cover is unlikely to set your head reeling as might be the case with the PRM, for example.

The guide starts with a brief introduction explaining its purpose, with some general comments on the nature of RISC OS and the importance of adhering to a standard look and feel for a Desktop-type user interface. It then goes on to introduce all the major elements of the Wimp chapter by chapter: the Desktop, the mouse, icons, windows, menus, dialogue boxes, keyboard input and so on. Each chapter describes clearly the way in which Acorn would like these elements to appear and respond; to reinforce the text, the booklet contains many more illustrations than the earlier guide. Of equal importance to the look and feel is the terminology to be used in manuals, help files etc. Much of this will already be familiar to users and programmers, but there are still too many

The article *Putting on the Style* (see page 36) looks at some aspects of implementing the guidelines in your own programs.

people who don't know, for example, the difference (in a RISC OS context) between "choose" and "select", or between "press" and "click".

Brief chapters follow on how to handle selection of part of a document in an editor, colour and sound, configurations, writing for CD-ROM, internationalisation, and application directories, together with a very important chapter on implementing the design. Amongst other important information, this latter chapter gives full details of how particular types of icon should look in the new 3D world - action buttons, writable fields, adjuster arrows, pop-up menus etc. A comprehensive glossary, an index and a list of significant changes from the earlier guide complete the booklet.

It is clear that over the 4 or 5 years RISC OS has been around, Acorn and its army of software developers have been learning from their experience of using the system. This is obvious from the style of many recent commercial applications, and is reflected in the style guidelines. For example, much more emphasis is given to dialogue boxes and toolboxes, which provide the user with an alternative to tortuous menu trees full of options which characterised early applications. Similarly, the familiar process of cut-and-paste when handling selections is expected to give way to drag-and-drop, which is described in the guide. This is a very exciting development which will enhance the power of RISC OS for the user (who is, after all, the chief beneficiary of a common style). Drag-and-drop allows you to make a selection in the usual way, and then to drag that selection directly to another place, either within the same document or into another window.

PRODUCT INFO

The RISC OS 3 Style Guide is supplied with the new PRM. It is also available separately from Acorn dealers (including Beebug) for £9.95.

The biggest single leap forward in the new guide is probably its support for, and encouragement of a 3D look to the Desktop. Most users will be familiar by now with *NewLook*, which is a set of tools supplied by Acorn to implement 3D on the Desktop (new icons, templates etc.). The guide explicitly assumes that 3D will become the norm and will be built into the next version of RISC OS, hence the need at this stage to ensure that all new software travels the same path until then. The chapter on dialogue boxes in particular is strong on 3D, and has detailed information and numerous illustrations to show how it should be done. At the same time, an attempt is being made to make the interface clearer for the user; for example, programmers are encouraged to eschew the ubiquitous OK button in favour of something more meaningful in the specific context - *Save*, *Print* or *Replace* for instance.

I mentioned other software developers earlier. One of Acorn's strengths as a computer manufacturer is its willingness to make resources available to, and listen to feedback from, other companies developing products for the Acorn market. This has undoubtedly helped the idea of a common style to gain credence, and it is interesting to note that, whereas in its previous incarnation the Style Guide was sometimes almost defensive in its approach, the new guide is a bold and confident statement. For example, previously Acorn made a distinction between what software "should" do and what it "must" do, reflecting a fear perhaps that some developers did not want their individual identity to be totally lost in the cause of standardisation. That particular battle having been won, the new guide can afford to be more positive: "should" is largely replaced by "is" or "are", or an imperative verb.

So why do you need the Style Guide? Well, to put it bluntly, your programs will not be taken seriously unless they conform. Users are now so familiar with the conventions laid down by Acorn that any program which deviates from them will stand out like a sore thumb. All computer programs are written to be used, and by following the guidelines you are accepting a principle that took a long time to take root in computing - that convenience for the user is more important than convenience for the programmer. Acorn does make the point in the guide that some of the guidelines require significant effort from the programmer to implement, and as a software developer myself I can agree with that statement. Nevertheless, for the user's sake the ideal should be pursued.

Don't think, either, that because you have the earlier Style Guide, you don't need to bother with the new one. As I have explained here, the guidelines have evolved quite substantially, and in many cases reflect quite different thinking as a result of experience gained by using the system, and of feedback from users and developers. If you want to write Wimp programs for RISC OS, then you must have this booklet.

The Tekkie Disc

Richard Hallas looks at a CD-ROM for programmers.

Most CD-ROM releases for RISC OS have, so far, had a strongly educational leaning, with relatively little to interest the technically-minded user. However, Emerald Publishing's new disc changes all that by packaging up most of Acorn's technical manuals and presenting them on CD-ROM together with a viewer application.

THE PACKAGE

The Tekkie Disc is a single CD-ROM supplied in a standard case, with a separate floppy disc containing the 'book reader' application, Librarian. I was rather surprised that the packaging does not enumerate the disc's contents: all it mentions explicitly is the RISC OS 3 Programmer's Reference Manual (PRM). In fact, the CD-ROM also contains the RISC OS 3 Style Guide, the BBC Basic Guide, the DDE manual and the Desktop C and Assembler guides. A copy of the RISC OS 3 New Look is also supplied.

Emerald Publishing recommends that 2Mb RAM, an ARM3 and at least a VGA monitor are basic requirements, although the disc will be usable with lower configurations; however, RISC OS 3·1 is essential.

The advantages of having manuals in an electronic rather than printed form are numerous. All page numbers in the manuals' contents and indices are hot-linked, so you can simply click on a number to turn to the relevant page. Other portions of text are also cross-referenced so you can, for example, simply click on a highlighted word to turn to an explanation. Most important of all, perhaps, is the ability to search for a particular word or set of words anywhere within a particular manual. You can also place 'electronic bookmarks' and write notes on the pages.

LIBRARIAN

The most important part of the package is the *Librarian* application supplied on floppy disc, as it is the only means of accessing the files on the CD-ROM. Currently, no printed documentation is provided for this application, but its Help file takes the form of a complete manual, so choosing *App. 'Librarian' => Help* from the Filer menu loads up the software and lets you learn how to use it interactively. This manual was written by Anne Rooney, who has written several books about Acorn machines, and it is particularly clear and easy to follow.

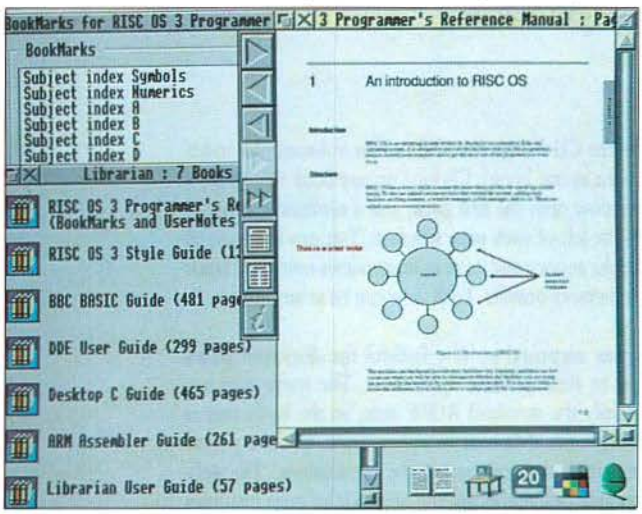
Once running, Librarian opens a window to show which books you have loaded, along with the number of pages in each (a book takes the form of a single file on the CD-ROM: the PRM's four volumes plus index count as one book). Clicking on any book title opens a window onto the first page, and a toolbox is attached to the left of each page window. You can load several books at once and have as many views onto each book as memory permits. Each view can be at any scale.

I was surprised at how faithful the displayed pages are to their printed equivalents. The fonts used are mainly the standard ROM ones, so the body text is marginally different in appearance, but the actual layout is identical, as are the illustrations. The only notable differences are the omission of page headings and the grey rule-off below each chapter title. Although I missed the page headings, their omission is hardly of great importance. You do in fact need the two Acorn fonts Selwyn and Sidney to get a correct display. As Sidney is not supplied with RISC OS, it would be useful if it could be supplied with this disc: at the moment you have to buy it separately.

Navigation of the manuals is via the toolbox attached to each page window. Icons are provided for moving between pages in either numerical order or in order of viewing, so if you follow a hot-linked page reference, for example, it is a simple matter to click on an icon to move back to where you were. There are also icons to move to a particular page number or directly to the contents or index pages.

It is also possible to place electronic bookmarks: you simply type a textual reference for a particular page, and it appears in an extendible list window. Choosing a bookmark turns straight to the relevant page. Finally, you can make notes on any page: simply click Adjust and type. Your notes can of course be erased, so it's not like defacing a real book. As well as being useful highlights, notes can also be searched, which makes them a lot more useful than might at first be apparent. Both the bookmarks and notes for each manual can be saved to disc, and some bookmarks are supplied with the application.

The search facility is reasonably powerful, and includes wildcards. You can search a whole manual at once or, more sensibly, a range of pages. CD-ROM is a comparatively slow medium, but even so I was surprised at the length of time searches could take: for example, if you search the entire PRM for a non-existent string, the search takes around 4½ minutes before it stops without finding anything. Even searching volume 3 alone for the first occurrence of the string "*Wimp_GetIconState*" (i.e. including wildcards) took over a minute. I was also surprised that all searches are currently case-sensitive, although a switch to make this selectable is promised for a future version.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Desktop C Guide (465 pages)
ARM Assembler Guide (261 page
Librarian User Guide (57 pages)
3 Programmer's Reference Manual : Pa
1 An introduction to RISC OS

Using the *Librarian* application to access the Tekkie Disc

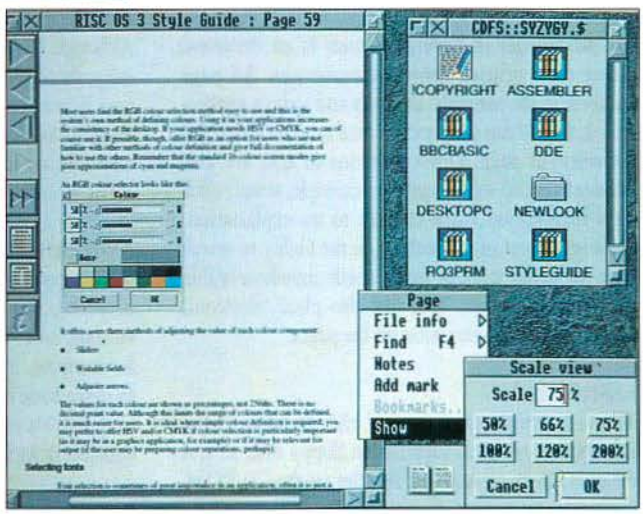
CRITICISMS

Librarian generally works well, although I did encounter a few bugs which will presumably be fixed before the final release. The worst feature in my opinion is that cross-referenced text is shown in a bright green outline font type, which is extremely difficult to read on a white background at anything other than very large sizes. I hope a more sensible (or user-definable) colour will be used in the final version of the software. I also wished that notes and bookmark files could be made to load automatically with the appropriate manuals, which currently does not appear to be possible. The worst feature was the slowness of searching, which suggests that best use is not being made of the technology available.

The pages on screen look exactly like their printed counterparts, which may or may not be a good thing. Although useful in many ways, it does mean that screen space is used inefficiently (being based on the PRM page layouts) and, unless you have a very large monitor, reading the text over long periods could well prove tiring on the eyes. It is not possible to view an entire page at full size without scrolling the window.

CONCLUSIONS

The Tekkie Disc will be very useful to programmers. The software is easy to use, and the cross-references are extremely quick and useful, although the search speeds certainly leave a lot to be desired. The price of the disc is reasonable considering its market, and compares well with buying the printed manuals; and, of course, the required storage space is a lot more economical! The real PRM books are not made redundant; the printed page still has many advantages. However, the excellent bookmark and note-making facilities are tremendously useful, and The Tekkie Disc should prove most helpful to programmers who have already purchased the printed version of the PRM.



The *Scale View* option

PRODUCT INFO

Product	*The Tekkie Disc*
Supplier	*Emerald Publishing* *166 Shelford Road,* *Trumpington,* *Cambridge CB2 2NE.* *Tel. 0223 840138* *Fax 0223 844652*
Price	*£99 ex. VAT*

Wimp Topics - Dragging Objects (2)

Alan Wrigley concludes his look at the techniques involved in moving objects around within a window.

Last month I described how to implement a slider bar, and also how to mark a selection of text by dragging across it with the mouse. This month I want to look at two further examples of object dragging within a window: moving or resizing a rectangular frame, and drawing a line using the mouse. In the first case, we will alter the size of a rectangle by dragging one of its corners (as you might do to change the size of a frame in a DTP package for example), while in the second case we will make the end of the line follow the pointer dynamically until the mouse button is released to fix the end point (a technique which is often referred to as rubber-banding).

MOVING AND RESIZING RECTANGLES

There is a lot to cover in this month's article, so to make it simpler I will describe how to move or resize a rectangle which already exists. However, once the techniques are understood, it should be easy to apply the process of clicking and dragging to create your own rectangle in the first place.

First of all, you will need a window with bit 4 of the window flags (auto-redraw) unset, and with its background button type set to *click/drag* (type 6). It is important that you remember to do this if you are using FormEd, since FormEd sets the default button type as *click*, and if you don't alter it then dragging simply won't work at all. In this window will be an outline rectangle whose bottom left co-ordinate will be at *x1%,y1%*, and top right co-ordinate at *x2%,y2%*. Also, the width and height of the rectangle should be held in *w%* and *h%* respectively. So your initialisation procedure should set up some default values for the rectangle, as well as *w%* and *h%*, for example:

```
x1%=60:y1%=-300:x2%=320:y2%=-100
w%=x2%-x1%:h%=y2%-y1%
```

You will also need a short routine, *PROCorigin*, which gets the work area origin of the window when required, as well as the current visible area co-ordinates. This will be called on several occasions whenever co-ordinates need to be translated between screen and work area. This procedure will look like this:

```
DEF PROCorigin
ox%=block%!4-block%!20
oy%=block%!16-block%!24
minx%=block%!4:miny%=block%!8
maxx%=block%!12:maxy%=block%!16
ENDPROC
```

As you will no doubt have guessed, *ox%* and *oy%* hold the work area origin, and *minx%*, *miny%*, *maxx%* and *maxy%* the visible area co-ordinates.

The redraw routine can now draw the rectangle in the window as follows:

```
    1000 SYS "Wimp_RedrawWindow",,block% TO
more%
    1010 WHILE more%
    1020 PROCorigin
    1040 MOVE ox%+x1%,oy%+y1%
    1050 plot%=9
    1060 PLOT plot%,w%,0:PLOT plot%,0,h%
    1070 PLOT plot%,-w%,0:PLOT plot%,0,-h%
    1090 SYS "Wimp_GetRectangle",,block% TO
more%
    1100 ENDWHILE
```

The reason for *plot%*, and for the missing line numbers, will be seen shortly.

We can now implement the rest of the moving and resizing process. First of all, we want a drag with the pointer anywhere over the rectangle to move the rectangle around within the window with the size unchanged. Secondly, we want some way of altering the size. Normally the application will provide an "ear" on one or more corners when the object is selected; the ear can then be dragged out to the required position to resize the rectangle. To keep matters simple, we will provide just one ear on the bottom right-hand corner. Clicking anywhere over the rectangle will select it and change its outline to a dotted red line with a small ear at the corner, while clicking anywhere in the window apart from the rectangle will deselect it and restore the outline to a solid black line. While the rectangle is selected, dragging on the ear will resize it. A flag, *select%*, will indicate whether the rectangle is selected or not, so this must be set to zero in the initialisation procedure.

First of all, we need two functions which will tell us, when a click or drag is signalled, whether the pointer is over the rectangle or the ear:

```
    2000 DEF FNrect
    2010 =(x%>=x1% AND x%<=x2% AND y%>=y1%
AND y%<=y2%)

    2020 DEF FNear
    2030 =(x%>=x2% AND x%<=x2%+12 AND y%>=y
1%-12 AND y%<=y1% AND select%=1)
```

Now our procedure which handles mouse events can get to work:

```
    3000 DEFPROCclick(x%,y%,b%)
    3010 !block%=whandle%:SYS "Wimp_GetWind
owState",,bk%
    3020 PROCorigin:x%-=ox%:y%-=oy%
    3030 CASE b% OF
    3040 WHEN 1,4:i%=select%
    3050 select%=-(FNrect OR FNear)
    3060 IF i%<>select% THEN
    3070 SYS "Wimp_ForceRedraw",whandle%,
x1%,y1%-12,x2%+16,y2%+4
    3080 ENDIF
    3090 WHEN 16,64:CASE TRUE OF
    3100 WHEN FNrect:block%!4=5
    3110 block%!24=minx%:block%!28=miny%
    3120 block%!32=maxx%:block%!36=miny%
    3130 WHEN FNear:block%!4=6
    3140 block%!24=ox%+x1%+12-w%
    3150 block%!28=miny%:block%!32=maxx%
    3160 block%!36=oy%+y2%-12+h%
    3170 ENDCASE
    3180 PROCdragbox
    3190 ENDCASE
    3200 ENDPROC
```

The parameters passed to *PROCclick* are the x and y co-ordinates of the click (x% and y%), and the button state (*b%*). After converting the co-ordinates to window-relative ones (lines 3010-3020), the button state is read. If it is a click (1 or 4), then *select%* is set if the pointer is over the rectangle or the ear, and a redraw of the rectangle area is forced if the select status has changed. This allows us to change the outline to a dotted line, as described in a moment.

If the button state is a drag (16 or 64), then a drag is initiated. This will display a rotating dash box which will follow the pointer around, though the rectangle itself will remain in position until the drag has ended. The drag parameters depend on the position of the pointer. If it is over the rectangle, then a fixed size drag box is required, and the drag will be confined to the visible area of the window. If it is over the ear, a so-called rubber box is required, which changes size by moving its bottom right-hand corner in a constant relationship with the pointer. In this case, the drag is confined to the visible area at the right and bottom, and to the existing top and left sides of the rectangle (plus 12 OS units to ensure you don't lose the rectangle altogether).

These constraints on the drag area are purely for simplicity. In general, it would be quite possible for the rectangle to be resizable in a negative direction (e.g. by dragging the ear to the left of the existing left-hand side, turning it into the right-hand side). Similarly, if the pointer is dragged to the edge of the visible area, the window should scroll to allow the drag to continue in the chosen direction. However, this degree of complexity is beyond the scope of this article.

PROCclick therefore sets the drag type in block+4 (5 for fixed box, 6 for rubber box), and the bounding area in block+24 to block+36, before calling *PROCdragbox*. In both cases, the initial drag box corresponds exactly to the rectangle, so *PROCdragbox* simply fills in these co-ordinates and starts the drag:

```
    4000 DEF PROCdragbox
    4010 block%!8=ox%+x1%:block%!12=oy%+y1%
    4020 block%!16=ox%+x2%:block%!20=oy%+y2%
    4030 SYS "Wimp_DragBox",,block%
    4040 ENDPROC
```

When "Wimp_Poll" signals that the drag is over (reason code 7), all you need to do is to set the new co-ordinates of the rectangle to the final co-ordinates of the drag box, and redraw the two sections of the window containing the old and the new positions of the rectangle:

```
    5000 DEFPROCdragover
    5010 oldx%=x1%:oldy%=y1%
    5020 oldw%=w%:oldh%=h%
    5030 x1%=!block%:y1%=block%!4
    5040 x2%=block%!8:y2%=block%!12
    5050 w%=x2%-x1%:h%=y2%-y1%
    5060 !block%=whandle%
    5070 SYS "Wimp_GetWindowState",,block%
    5080 PROCorigin:select%=0
    5090 x1%-=ox%:y1%-=oy%
    5100 x2%-=ox%:y2%-=oy%
    5110 SYS "Wimp_ForceRedraw",whandle%,ol
dx%,oldy%-12,oldx%+oldw%+16,oldy%+oldh%+4
    5120 SYS "Wimp_ForceRedraw",whandle%,x1
 %,y1%-12,x2%+16,y2%+4
    5130 ENDPROC
```

Lines 5010-5020 preserve the old co-ordinates before reading the final drag box position in lines 5030-5040 and converting this to window co-ordinates in 5060-5100.

There is one loose end left - we need to update the redraw procedure to draw the dotted outline when the rectangle is selected. The following modifications to the listing given earlier will do the trick:

```
1030 SYS "Wimp_SetColour",7+4*select%
1050 plot%=9+16*select%
1080 IF select% RECTANGLE ox%+x2%,oy%+
y1%,12,-12
```

This simply sets the colour as red if selected or black if not, alters the plot code to 9 (solid) or 25 (dotted) as appropriate, and if selected, draws a small rectangle at the bottom right to produce the ear.

RUBBER-BANDING

Rubber-banding is the term usually applied to the effect you get when you drag out a line from its starting point, and the end of the line follows the pointer until it becomes fixed at the point where the button is released. This is very simple to achieve, using a similar technique to the one described for the slider bar last month. You need a drag type 7 (invisible drag point), and you must then claim null codes and draw a line between the starting point and the current position of the pointer each time you receive a null event (after first erasing the line drawn at the previous event).

First of all, you need to initialise the following additional variables:

```
active%=0:mask%=1:oldx%=0:oldy%=0
```

You must also now use *mask%* as the poll mask when calling "Wimp_Poll". Now refer to *PROCclick* as listed above and make the following alterations:

```
3030 block%!4=0:block%!8=-1024
3040 block%!12=1280:block%!16=0
3050 SYS "Wimp_UpdateWindow",,block%
TO more%
3060 WHILE more%
3070 MOVE ox%+x1%,oy%+y1%
3080 PLOT 7,ox%+x2%,oy%+y2%
3090 SYS "Wimp_GetRectangle",,block% T
O more%
3095 ENDWHILE
3100 x1%=x%:y1%=y%
3105 active%=1:block%!4=7

Delete 3130-3170

3190 mask%=0
```

Lines 3030-3095 merely erase any existing line before starting a new one, using plot code 7 to draw in the background colour. *x1%* and *y1%* are then set to the start of the line, a flag set (*active%*) to indicate that there is a line to be drawn, and the drag box parameters filled in as before (drag type of 7 in line 3105, and the bounding box set to the visible area in lines 3110-3120). *PROCdragbox* is then called, and the poll mask is set to zero. When you receive a null event, you must update the window by erasing the line at its previous position and then drawing it between the starting co-ordinates and the current pointer position. This is done as follows:

```
6000 DEF PROCnull
6010 SYS "Wimp_GetPointerInfo",,block%
6020 x%=!block%:y%=block%!4
6030 !block%=whandle%
6040 block%!4=0:block%!8=-1024
6050 block%!12=1280:block%!16=0
6060 SYS "Wimp_UpdateWindow",,block% T
O more%
6070 WHILE more%
6080 PROCorigin
6090 MOVE ox%+x1%,oy%+y1%
6100 PLOT 7,oldx%,oldy%
6110 MOVE ox%+x1%,oy%+y1%
6120 PLOT 5,x%,y%
6130 SYS "Wimp_GetRectangle",,block% T
O more%
6140 ENDWHILE
6150 oldx%=x%:oldy%=y%
6160 ENDPROC
```

Note that although in this simple example we have plotted in the background colour to remove the earlier line, if there are other objects in the window then parts of them may be erased too. In this case you would need a more complex update routine (and possibly use EOR plotting).

PROCdragover is now very much simpler:

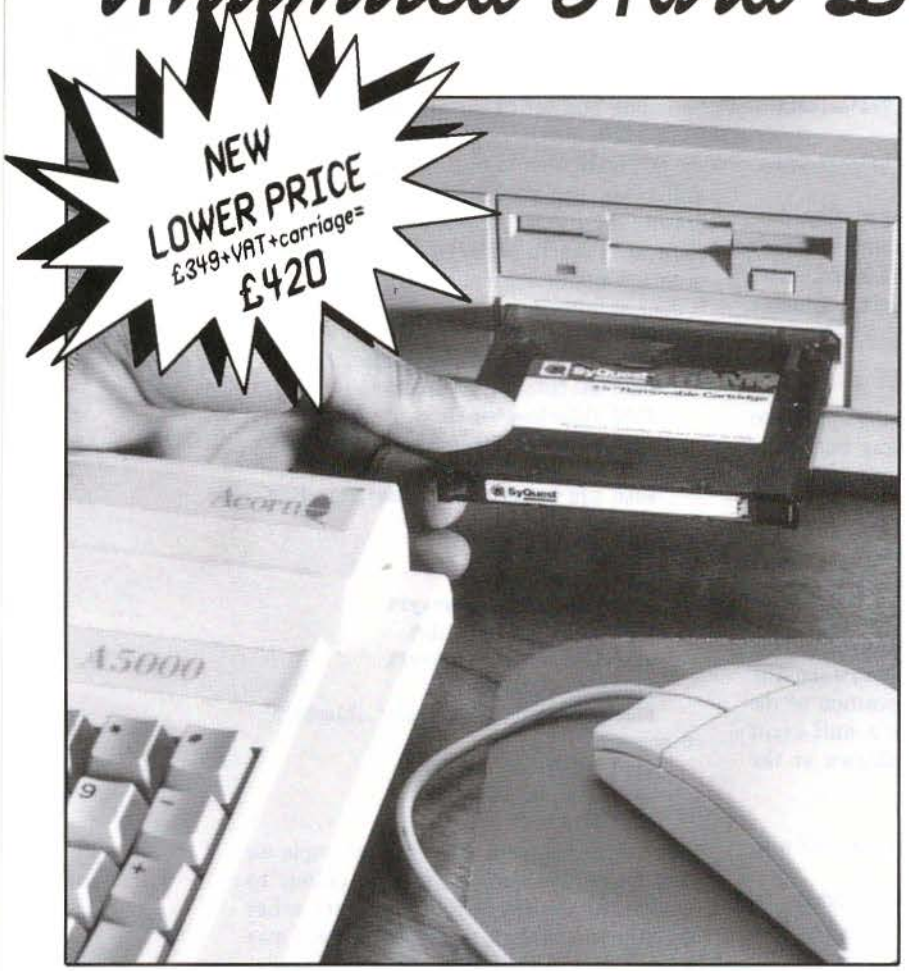
```
5000 DEF PROCdragover
5010 !block%=whandle%
5020 SYS "Wimp_GetWindowState",,block%
5030 PROCorigin:mask%=1
5040 x2%=oldx%-ox%:y2%=oldy%-oy%
5050 ENDPROC
```

Finally, the active part of *PROCredraw* should now look like this:

```
IF active% THEN
 MOVE ox%+x1%,oy%+y1%
 DRAW ox%+x2%,oy%+y2%
ENDIF
```

This month's magazine disc contains an application called *DragDemo* which illustrates both the processes described in this article.

Unlimited Hard Drive



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Into the Arc: Computer Programming (2)

Mike Williams is your pilot into uncharted seas.

I guess that in some ways the manner in which computing has developed over the years has some (not many) similarities with the EEC, or European Union as it is now called. As time has gone by, more countries have joined, and the number of languages, and hence interpreters and translators needed, has increased exponentially. Now although some may argue differently, and perhaps with some justification, the world of computer languages is largely devoid of the political infighting and defence of national interest which bedevils the EU. But some analogies are still helpful, or so I believe.

Let us consider again the role of interpreters and translators as a way of understanding at least one of the reasons why C is preferred by commercial developers to Basic. A human interpreter is someone who takes in meaning expressed in one language, and more or less immediately gives out the same meaning expressed in another language. The result is nearly spontaneous, but, should the same sentiments be expressed on another occasion, the same process has to take place again, and again, and again. The same is true with a Basic interpreter: every time it encounters an instruction in Basic, it interprets it in the computer's machine code, and if it encounters the same instruction again, it performs the conversion again. Thus a lot of time in running a program written in Basic is wasted in repeatedly interpreting the instructions, rather than carrying out the tasks specified by the instructions.

The alternative scenario is analogous to that of the translator, who (with the aid of a dictionary) performs a once and for all translation from one language to another. From then on, the translation is always available, but at the cost of some loss of flexibility. Changes cannot be made instantaneously; instead the original text will be modified and then re-translated. In computing terms, the translator is called a *compiler*. Its job is to take a computer program written in one language, and compile (or translate) that program into another language, usually the computer's language (machine code). The compiler is itself yet another program, but unlike the Basic interpreter, compilers usually exist as separate programs on disc which must be loaded into the computer before they can be used.

Once a program has been compiled, most of the computer's time can be devoted to the tasks specified by the program, and very little time is wasted in overheads. Thus a compiled program usually runs faster than an interpreted one, but with some loss of flexibility: change the original program and the entire program must be recompiled. Another potential benefit of a compiled program is that in its compiled form it usually (but not always) needs less memory. It also offers some security as the compiled code cannot easily be altered.

Now you can see that all of these benefits are likely to have the best pay-offs for large commercial programs. But if that is the case, you might ask, why isn't there a Basic compiler, which will take a Basic program and translate it into machine code. Why do commercial developers prefer C? The answer to those questions is less obvious. Partly Basic was designed to be an interpreted language from the outset, with the consequent ease and immediacy of development. Partly it stems from the highly standardised position of C. However, there are two Basic compilers available for the Archimedes: *RiscBasic* from Silicon Vision, and *ABC* (A Basic Compiler) from Oak Solutions.

In the past, a number of languages have attained wide currency in the computing world. The oldest among these are Fortran and Cobol, both of which were designed in the late fifties, and surprisingly, both are still in use today (Acorn produced a Fortran compiler for the Archimedes in its earlier days). But these languages were designed with large mainframe computers in mind, and furthermore, ideas on programming and programming languages have changed and developed in the intervening years.

One computer language which became very popular for some time was Pascal, widely used in the academic world as a teaching language, and originally devised by Nicklaus Wirth at the

Technological University of Zurich (ETH), Switzerland in 1970. Pascal compilers were developed for many machines; there was at least one for the BBC micro, and Acorn released a Pascal compiler for the Archimedes soon after that machine's introduction in 1987. By that time the popularity of Pascal had already begun to wane, and it is probably true to say that Pascal never gained much acceptance outside of academic circles.

Enter C. This language is in fact nearly as old as Pascal, having been devised by Dennis Ritchie in 1972 at the AT&T Bell laboratories in the USA. It was also very strongly associated for many years with the Unix operating system which derived from the same institution. Both C and Unix had a long gestation period, and for many years remained the province of the academic and research worker. But unlike Pascal, C and Unix have both gained acceptance in the commercial world, to the point where C is probably the most commonly used language for commercial software development on all personal computer systems, and that includes the Archimedes, Apple Macintoshes and PCs.

Moreover, C is a clearly defined and structured language. In this respect the C programmer's 'Bible' is *The C Programming Language* by Kernighan & Ritchie, first published by Prentice Hall in 1978, but still available today. The advantage of using one standard definition of the C language is that a program written in C can, with some limitations, be compiled into the machine code of any computer for which a C compiler (or translator) exists. Thus a developer can produce a program in C, and then compile one version for a PC and another version for the Archimedes - if only life were that simple! However, in the early days of the Archimedes, Acorn used this route to provide some major applications for the Archimedes relatively quickly. Applications such as Logistix (a spreadsheet), Acorn DTP, and 1st Word Plus (word processor) were all PC programs written in C for the PC and ported onto the Archimedes.

So what is C like, and why is the dream of portability not a genuine reality? Let's deal with these two questions in reverse. Every computer has its own characteristics. The hardware of the Archimedes is different to that of other computers, particularly when it comes to the screen display. If one computer can support 16 colours, and another can support, say, 32 colours, how can one program be written which can use both systems? The answer is it can't. But a program can often be structured in such a way that the machine dependent parts can be neatly packaged up, so that only that part of a program has to be changed. A related question is how, if C is a single standard language, programs written in C can cope with all the peculiarities of a particular machine, like the Desktop environment of the Archimedes for example. The answer is that most machine specific functions are provided in the form of a *library* of routines which can be called and used from within the main program. Each machine will have a different library of routines. On the Archimedes every compiled C program needs to have access to *CLib*. This is supplied as a module, originally sitting inside the !System folder, but since the advent of RISC OS 3, also included in ROM. It hence takes up no space in user memory, and is available at all times. Thus programs written in C for the Archimedes can be compiled and distributed to all Archimedes users who can run them without further ado.

To compile C programs you need a C compiler. This is not supplied as standard with the Archimedes, but compilers are available from two sources. Acorn supplies its *DDE*, if you like the 'official' version, but it costs well in excess of £200. It's ideal for developers, but is probably too expensive or too difficult for those just learning the language, or just dabbling. The other alternative is the recently renamed and relaunched *Easy* C from RISC Developments which sells for just under £50, and which is much more targeted at newcomers to C programming. It does not have the same range of tools, nor does it include Acorn's RISC OS library, but it does provide a full implementation of C, with a library of its own, and at a much lower price.

Let's take a look at a simple C program just to get a flavour of what it's like. Here is a short example:

```
#include <stdio.h>
#include <ctype.h>

#define No_Let 26

int ct[No_Let];

main()
{
  int c, i;

  while ((c = getchar()) !=EOF)
```

```
      if (isalpha(c)) {
         c = tolower(c);
         ct[c-'a']++;
      }
    for (i=0; i < No_Let; i++)
      printf("%c count = %d\n",i+'a',ct[
i]);
  }
```

In many ways this looks very different from the example of a Basic program which I gave you last time; it doesn't have any line numbers at all, an obvious characteristic of Basic programs, and it's a lot more cryptic. C is much more a language designed for professional programmers, rather than a language for those who just want to dabble in a little bit of programming. Nevertheless, if you take the time to look carefully through the program, you may begin to get some vague idea of what it is doing.

There are 26 letters in the English alphabet, and the program simply counts the number of times each letter occurs in a string of characters input to the program. The function *getchar()* gets the next character. If it is a letter (not a digit or other character), it is converted to lower case (if necessary), and a counter for the corresponding letter increased by '1'. When there are no more characters to count, the program prints out (displays) the numbers of each letter encountered - if anything, the print function, *printf*, is the most cryptic of all the instructions in this program. The initial two *#include* statements are references to library functions.

Unlike Basic, we cannot just 'run' this program. It must first be compiled with a C compiler, before the the resulting, so-called *object* code can be run, and for that you need a C compiler as I have already said.

There are, of course, many other computer languages, mostly specialised ones like Prolog, Simula, Ada etc. The latest language to gain popularity among the programming gurus is 'C++', itself derived from C, but as the name implies rather beyond the scope of Into the Arc. For the aficionados, though, Acorn has been working on a C++ project for some time, and my guess is that it will emerge from its Acorn wraps sometime this year. That will be another story.

Putting on the Style (continued from page 37)

your application doesn't want to recognise a state in which all options are off, you must trap clicks with Adjust on the radio buttons and reselect the icon that was clicked.

Radio and option buttons both use text-plus-sprite icons which are unfilled, and which have the vertical bit set and the horizontal and right-justified bits unset. They should not have a border, though while designing the icon it is useful to leave the border on to check that the text actually fits inside the bounding box. Sprites are provided by Acorn (*opton*, *optoff*, *radioon* and *radiooff*) in both the RISC OS 2 and RISC OS 3 ROMs, and also with NewLook, and these should be specified in the validation string, for example "Soptoff,opton" for an option button.

For situations where a choice has to be made in a dialogue box between a number of items, you should consider a pop-up menu or a scrollable list, both of which help to keep the size of the window down (though you can't use them in transient dialogue boxes). With a pop-up menu, you should have a display icon (validation string "R2") showing the current selection, and alongside it a button which the user clicks to open the menu. The button is an unfilled text-plus-sprite icon with no border, and a validation string "R5;Sgright,pgright". The sprites specified in this string are supplied with NewLook, and look like a miniature menu. For systems which don't have NewLook, you could consider providing your own sprites of the same names (but *not* in the !Sprites file - see *Technical Queries*, RISC User 7:3). To find out if NewLook is operational, see *Hints & Tips* elsewhere in this issue.

A scrollable list uses a scrollable pane within the dialogue box containing the available choices. An example can be found in Ovation's *Define paragraph style* box. A scrollable list is also often used as a font selector (in Wordz for example). A description of how to use panes was given in *Wimp Topics* (RISC User 6:8).

These are just a few of the guidelines which are covered in much more detail in the Style Guide. There are, of course, many others to consider. It is important to be aware that the guidelines are not written on tablets of stone handed down by Acorn, but are an evolving set of ideas based on real experience and discussions with other software developers. In other words, if you have opinions on how the guidelines should evolve in the future, Acorn may be receptive to your views.

PC Emulator Survival Guide (11)

by Gordon Gilmore

Customising the function keys to make life easier under the PC Emulator.

Back in the heady days of the BBC microcomputer when personal computing was new and the 'PC' was a mere glimmer in an IBM executive's eye, the command line was all we had to work with. Acorn provided us with the *KEY command to allow us to assign strings to the function keys. Many column inches were devoted in BEEBUG on how to cram the most amazing commands into a function key definition. What a pity that DOS doesn't allow us to do the same. In fact that's not quite true because with a little ingenuity and ANSI.SYS we can reassign every key on the keyboard to do something useful.

Those of you who have followed this column faithfully will already have the line:

```
DEVICE=ANSI.SYS
```

in your CONFIG.SYS file, so if you run your Emulator you will be ready to start. If you don't, now is the time to put it there (and re-boot DOS) if you want to follow the rest of this article.

REASSIGNING FUNCTION KEYS

Let us suppose that we often use the DIR command with the /W switch to give a wide display. Type the following exactly:

```
PROMPT $e[0;67;"DIR /W";13p
```

You should now find that you have lost your prompt, so to restore it type:

```
PROMPT $p$g
```

The first PROMPT command is interpreted as follows:

- $e[is the code to tell ANSI to expect an Escape sequence (if you remember we used this to provide a colour prompt back in part 4 of the Survival Guide).
- 0;67; is the keyboard scan code for function key 9.
- "DIR /W" is the text we want to be printed when we press F9.
- 13 is the ASCII code for Return to terminate the command text.
- p terminates the Escape sequence.

So press F9 and you should find that DIR /W is typed and executed by DOS. Using this command, every key on the keyboard can be reprogrammed as long as we know the appropriate scan code. The scan code is also referred to as the *Extended Key Code* and I have listed some of the more useful ones in Table 1.

59-68	F1 to F10
84-93	Shift-F1 to Shift-F10
94=103	Ctrl-F1 to Crl-F10
104-113	Alt-F1 to Alt-F10
16-25	Alt-Q to Alt-P
30-38	Alt-A to Alt-L
44-50	Alt-Z to Alt-M

Table 1.
PC Extended Key Codes (Scan Codes)

In each group the codes are assigned in the order of the keys *on the keyboard*. Normally, when you press a key, say the letter 'A', the appropriate ASCII code is put into the keyboard buffer. When a function key is pressed, two codes are put into the buffer - a null code (0) and the extended code. Pressing F9 gives 0 and 67. Even such keys as Home, Insert and Page-Up have extended character codes which can be used.

I never could remember which F-key I had assigned to which instruction, and the prospect of using Alt-letter instead I find attractive. So, if we wish to use, say, Alt-W to perform our DIR /W command we need only replace the 67 in our PROMPT command by 17, the code for Alt-W (according to the table, Q has the code

software showcase

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Sleuth is an Optical Character Recognition (OCR) package which converts human readable images of text into machine readable form.

Sleuth processes a scanned image of printed material and converts it into an ASCII file which may be further processed using a text editor or word processor. It is ideal for converting magazine articles, newspaper cuttings, legal documents, program listings, other resource materials etc. etc.

Sleuth version 1.0 is a low-cost entry package into OCR and produces excellent results on a range of typefaces. It is the first in a planned family of products which will take OCR on Acorn machines to full professional level. Any future OCR products will be available as upgrades to existing users.

- Fully RISC OS compliant and multitasking
- Sleuth recognises most PostScript fonts and other similar fonts (not bold or italic)
- With good quality 400 dpi images, Sleuth can achieve over 97% accuracy
- Converts text at speeds of 80-250 wpm
- User definable 'zone' used to choose which rectangle on the image to convert
- Handles sizes 9-24pt (you will need a 400 dpi scanner for good results below 12pt)

To use Sleuth you will require a scanner with a minimum resolution of 200 dpi. For best results you will need a 300 or 400 dpi scanner.

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16 and therefore W, being next to the Q on the keyboard, must have a code of 17).

Before you continue to experiment, it might be useful to define the F9 key to reset the prompt to normal thus:

```
PROMPT $e[0;67;"PROMPT $$p$$g";13p
```

Notice the double dollar signs. As we have seen, DOS uses the dollar in a PROMPT command to indicate special functions, like $e for example. The $$ tells DOS that you really do mean you want a dollar. It would be better to avoid redefining function keys 1 to 6 because these have special functions for command line editing (remember part 4 of the Guide again). How about this:

```
PROMPT $e[0;25;"£";13p
```

Yes, it's another way of persuading DOS to deliver the pound sign by pressing Alt-P. You will have to insert the £ into the command itself using Alt-156.

BATCHES TO MAKE IT EASY

Now, of course, you won't want to be typing all these reassignment commands every time you start up the Emulator, and the sensible thing is to put them all into a batch file, say REASS.BAT, and then put the line:

```
CALL \BATCHES\REASS
```

into your AUTOEXEC.BAT file before the PROMPT PG command. As an aside here, it is worth noting that you could run the batch command simply by quoting its name. However, if you call a batch file by name from within another batch file, when it is completed control will not be returned to the calling batch file. The solution is to use the CALL command which makes sure that control returns to the original batch file after running the second (it's rather like the difference between Command and Obey files in RISC OS). You could of course put the PROMPT command list into the AUTOEXEC file, but keeping things in separate boxes is a good survival strategy, and a separate batch file is to be preferred. This is the batch file I use:

```
@echo off
REM Commands for setting up Alt-keys
IF %1X==HELPX GOTO HELP
IF %1X==helpX GOTO HELP
    echo on
    PROMPT $e[0;46;"PROMPT $$e[31;44;1m$$p$$
g$$e[33;44;1m$_cls";13p
    PROMPT $e[0;25;"PATH$QC:\BATCHES;C:\DOS;
C:\UTILS;C:\";13p
    PROMPT $e[0;19;"C:$_CD \COMMON";13p
    PROMPT $e[0;31;"DIR $BSORT /+10$BMORE";13p
    PROMPT $e[0;17;"DIR /W";13p
    PROMPT $e[0;45;"CD \PCTOOLS$_PCSHELL";13p
    PROMPT $P$G
    @echo off
    :HELP
    echo Alt-C - Set up Coloured Prompt
    echo Alt-P - Reset PATH to default
    echo Alt-R - Return to C:\COMMON
    echo Alt-S - Directory sorted on extension
    echo Alt-W - Wide directory listing
    echo Alt-X - Load PCSHELL
```

The file is used simply by calling REASS. If you can't remember what you have assigned to what, REASS HELP will tell you. The Alt-X command will be of no use to you unless you have PCSHELL, but I am sure you can see how you could replace this with your own favourite application command.

Note the echo commands strategically placed around the file. The first one with the '@' prevents all the help selection commands being printed on screen. The 'echo on' just before the PROMPT command is essential. Unless these commands are printed to screen they will not be implemented.

Unfortunately, commands assigned to keys cannot contain replaceable parameters. Replacing Alt-C by COPY %1 %2 will merely produce a 'File not found - %1' response from DOS. However, specifying the files in full as in 'COPY FILE.TXT FILE.BAK' will work as intended.

You are not restricted to single commands. Different commands can be strung together separated by $_ which DOS interprets as return and linefeed. So:

```
PROMPT $e[0;19;"c:$_CD \COMMON";13p
```

as in the batch file above, will persuade Alt-R to select drive C: and return you to your COMMON directory from anywhere you happen to be at the time.

There are a number of other characters which PROMPT interprets in a special way:

```
$p    the current drive:directory
$g    indirection operator >
$l    Indirection operator <
$b    Pipeline character |
$q=
```

$p and $g we already know as a means of creating our C:\COMMON> prompt. $b is used in the batch file like this:

```
PROMPT $e[0;31;"DIR$bSORT /+10$bMORE";13p
```

which tells Alt-S to display a directory list, sorted according to file extension and piped through MORE. Finally, what do we do if we want to remove an assignment from a key? Easy, we just tell ANSI what the original key should be:

```
PROMPT $e[0;67;0;67p
```

resets F9 to do whatever F9 would normally do.

DOS 5 AND DOS 6 USERS

Those of you who have invested in DOS5 or DOS6 have an alternative way of abbreviating commands in the form of a terminate-and-stay-resident program called DOSKEY. This is a delightful utility which is well worth using. It is loaded by calling by name, and this could usefully be put in the AUTOEXEC.BAT file.

Firstly, DOSKEY keeps a list of all the command line instructions as you issue them, and allows you to recall them later. The list can be stepped through backwards and forwards using the cursor up and down keys. When a command has been recalled, it can be edited using the normal command line edit keys. The list of commands currently stored can be examined simply by pressing F7. If you need to use a command used some time ago it can be recalled by typing in the first few characters and then pressing F8. DOSKEY will search the list for the first match and display it. Alternatively you can call it up by number after pressing F9.

All in all a very useful facility, but there is more. Whole DOS macros can be stored and replayed at a couple of keystrokes. For example, we might store the 'return-to-base' command above as follows:

```
DOSKEY #R=C:$TCD \COMMON
```

(here the $T means 'Return'). As far as I can see there is no way of involving the function keys in this, but the hash key (#) could be used to avoid confusion and indicate a macro name: #R, #1, #2 and so on. If you want confusion there is ample scope, for DOSKEY will allow you to use macro names identical to DOS command words. The possibilities are endless, and worrying when you consider what a practical joker might do while you are away at lunch. More seriously, this could be useful. I once happened along just too late to prevent an assistant answering 'Y' when asked if she really wanted to format the hard disc in response to a FORMAT command (she had not looked at the screen properly and assumed the message was the normal '...press ENTER when ready...' message). Had DOS6 been available at the time I could have avoided the problem by setting up (all on one line):

```
DOSKEY FORMAT=IF NOT$1X==X IF NOT $1X==C:X
FORMAT $1
```

The FORMAT command would then have been intercepted and a check made to ensure that there was a drive parameter specified and that it was not C:. Note how in the DOSKEY macro the replaceable parameters, which you would type at the command line as %1 %2 etc., are replaced by by $1, $2 and so on.

Again it makes sense to put all these macros in a batch file which you can CALL from your AUTOEXEC file immediately after invoking DOSKEY. DOSKEY helps you to do that by providing a switch /M which tells DOSKEY to list the current macros. So you would set up and test all your macros at the command line and then use the command:

```
DOSKEY /M > \BATCHES\MACROS.BAT
```

To list them to a file. You must then edit the MACROS.BAT file putting DOSKEY at the start of each line to make it into a complete command.

For those who don't have DOS 5 or DOS 6 it is worth keeping an eye on the magazine freebies and shareware discs. There are several utilities around which provide similar facilities. The next issue of the Guide will look at a bundle of budget software which might help you run your office and direct your stargazing. In the meantime suggestions of subjects for future Guides would be welcome.

The range of TurboDrivers has expanded to include versions for the Hewlett-Packard DeskJet and LaserJet range of printers, as well as the Canon bubblejet range. The latest release 3 versions are now fully RISC OS 3.1 compliant, offer new advanced features and are faster than ever before.

The bottom line is that if you value your time, the TurboDrivers are for you - they can render pages and give control back typically at between three and ten times faster than Acorn printer drivers or Ace PRODrivers. Indeed once the image has been rendered then the printing continues entirely in the background - as fast as the printer will go. This makes a large difference for just one page and an enormous difference if you are printing more than one copy of each page.

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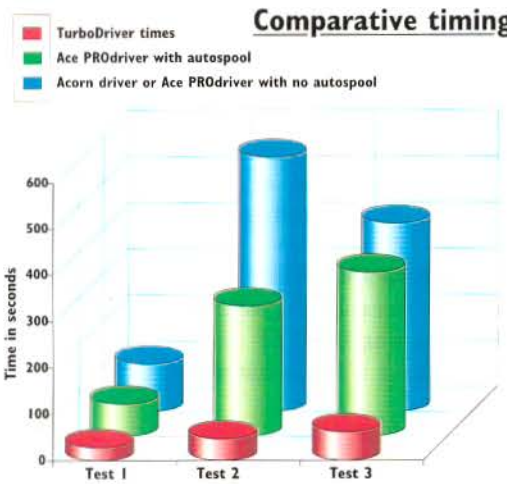
RISC OS 3 Turbo DRIVERS



Test1 - A single DTP page of text and scanned graphic images
Test2 - Two copies of a three page text and graphic document
Test3 - A complex full page of graphics from ArtWorks.

The timings indicate the time in seconds to get control back. All tests performed on HP DeskJet 500 printer using a 4Mbyte A440 with an ARM3 fitted. Other machine combinations show similar performance gains.

Illustrated are a selection of printers supported by TurboDrivers. There is constant development in driver support so please contact Computer Concepts for details of latest printers.

Canon TurboDrivers £49 + VAT (£57.57 incl.)
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HP TurboDrivers £49 + VAT (£57.57 incl.)
(Supports all monochrome and colour DeskJet and LaserJet printers)

Please specify printer type when ordering. The BJ-230 and all HP TurboDrivers are only suitable for RISC OS 3.1 machines. 2 MBytes required.

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Good Impressions

Richard Grant takes a another peek at the Style Editor, and creates some publicity in Impression.

My apologies to those who expected to see this article appear some time ago but a sudden and disastrous machine failure at the last moment put paid to that. However, I am up and running again now, and in this month's installment we are going to pull together some of the foundation work which we have covered previously in this series. Our object will be to construct an information leaflet based on an A4 sheet folded twice to produce an upright handout.

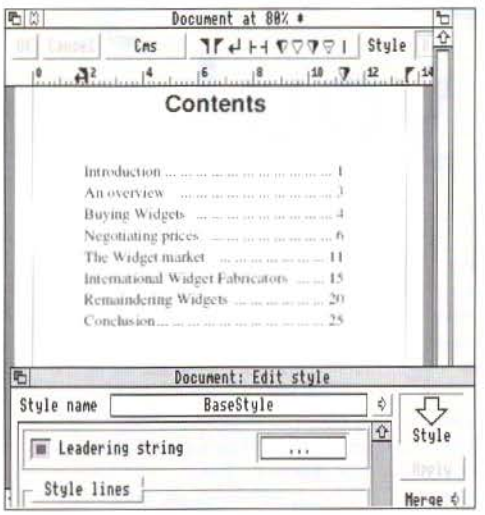


Figure 1. Suggested layout for contents page

But first, continuing our tour of the Style Editor, we'll take a quick glance at another feature. *Leadering* is used when creating a Contents page and is a feature which uses the eye's natural inclination to be led along a line when connecting separate parts of text. One customary string is three full-stops followed by a space. If this is entered in to the leadering field of a style, and that style is subsequently used, then wherever a tab occurs in the document, it will appear as several groups of full-stops (see figure 1). You could, of course, use any character you want for Leadering - try a tilde (top left of keyboard) or an en-dash (usually entered with Shift-Ctrl-minus-sign) for something different. Note that under any circumstances, you can use no more than four characters as a Leadering string, although you may use less if you wish. Note also the employment, in figure 1, of a right-justified tab mark for the page number column so that double-figure numbers stack to the left into the text area - it looks neater than left justification. I will leave the examination of the remaining parts of the Style Editor, the use of Style Lines and Style Labels for another occasion.

AND NOW FOR SOMETHING COMPLETELY DIFFERENT

A three-part leaflet is something we are all familiar with, being one of the most commonly used formats that derives from an A4 sheet, but it can present some problems in construction. This is our next task, so to start, open an Impression document and using Ctrl-F2, call up the *Master Page* window. Drop the *Edit* menu over the Master Page and click *New Master Page* to open the *New Master Page* dialogue box (figure 2). This was covered in RISC User 6:2 if you need to refer back. Set the parameters to A4 landscape with 3 columns, and when you close the dialogue box, you will be notified that you have created Master Page 18.

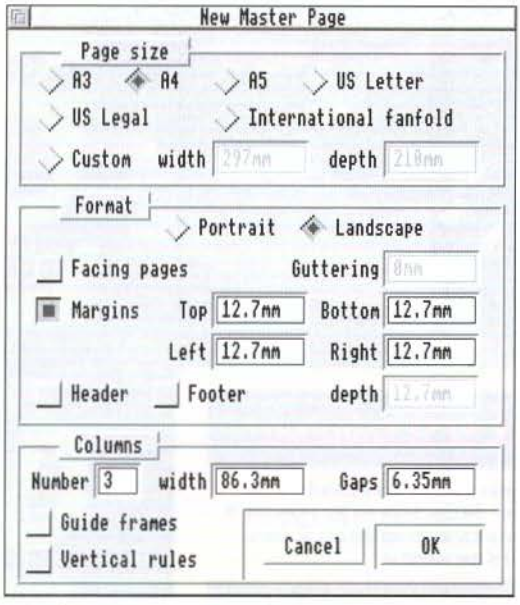
Close the Master Page window and, using Shift-Ctrl-A, alter the Master Page used in the main window to 18. Note that size and spacing between the frames (the gutter) is set automatically in the first instance by Impression, although you can edit either of them when you create the Master Page, or afterwards. These are our three columns, and at this stage you may wish to alter the frame positions and the space between them to suit (you might find it easier to do this if you switch off *Snap to Guides* in the *Frame Menu*). Actually, the leaflet will consist of two pages, but your flowing text will create the second page automatically. Remember that flowing text will only create subsequent pages if the text is in Master frames.

COVER STORY

We need to plan a little. Imagine such a leaflet half opened out. The "front cover" is, in fact, the last column on the second page, with the real text starting at the first column of the first page, flowing through the three columns of the first page and onto the first two columns only of the second page. If you want, you can designate the "back cover". This is the middle column of the second page, so your text would then stop at the end of the first column of the second page (figure 3).

We have now obtained our basic design for a leaflet. At this stage, you need some text - any text file will do to practice with. Drop your text onto the

first frame of the leaflet and let it flow through the document. And this is where, of course, you can let your creativity run rip. Suggested ideas might be the use of borders around the frames, or a logo or motif at the bottom of each "page". Similarly, when you initially specify the *New Master Page*, you can specify Header and Footer frames, and vertical rules between each "page" of the leaflet but note that the latter would be of limited use for a leaflet, although they can be helpful to act as folding guides.



The *New Master Page* dialogue box

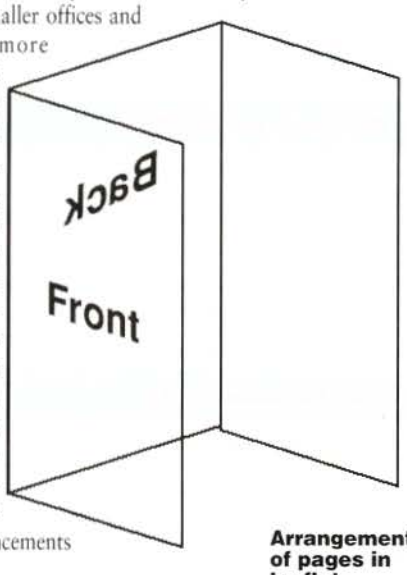
Remember, your "Front" page is the last column of the second page and the "Back" page, the middle column. Naturally, it is essential when you drop your text onto the leaflet, that you ensure that it does not flow onto these two columns. You might find it more helpful if you place a standard frame of the same size directly onto each of these two columns as this will restrict your text to just this section.

PRINTING PROBLEMS

There is one problem that can arise with printing, though, when using some page printers, such as bubble jet and laser printers. These printers usually have a closely hardware-defined printing area that is somewhat smaller than the physical area of paper that it prints on. This area is called the logical page, and no amount of manipulation of the computer's printer drivers will allow printing outside of this area. When printing, say, a letter, on an A4 sheet, this is not important as it is highly unlikely that you would want to print to the very edge of the page anyway, but when your "page" size is suddenly reduced to a third of an A4 sheet, the apparent large margins at the outer edges of the physical sheet can eat up quite a lot of usable printing space.

Fortunately there is an answer, but it is devious and requires the use of a reducing/enlarging photocopier. The idea is that you print your three part leaflet at a reduced size onto a sheet of A4, at say, 95% magnification, positioning the output so that it leaves an equidistant margin all round. Then simply place the sheet in a suitable photocopier and set the magnification to, say, 105%. In this way, you will be able to print to almost the entire size of the physical paper as most photocopiers have a narrower "dead" space around the edge than printers. Inevitably, however, there is a small trade off in quality as there are now two stages to reproduction, but that's life!

That closes this installment nicely. No doubt you will have heard all about the new versions of Impression that, at the time of writing, are just appearing. DTP is on the up as it finds its way into smaller and smaller offices and finds more and more uses, and in future columns I shall be looking at some of the improvements, and differences, between Style and Publisher as the two products develop in a parallel manner. Suffice it to say, at this moment, that if you are using Impression Junior or Impression II, you should seriously consider upgrading as the difference in cost is minimal, but the enhancements are considerable.



Arrangement of pages in leaflet.

Sadly, I have to say that the postbag has been a little thin recently! Please write to me at RISC User if you have anything to say about Impression, Style or Publisher and their uses, or if you don't understand something and want to find out. This column exists for everyone, and a strong user input is always appreciated.

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DETECTING 3D WINDOWS

Alan Wrigley

Although Acorn's NewLook is now preferred by many users, there are still just as many who do not use it, either because of the memory overhead associated with it, or because they simply don't have RISC OS 3. When writing software which may be used by other people, it may be useful to know if NewLook is in use, since it may not be appropriate to use 3D icons on a machine which is not using 3D elsewhere. Alternatively, if NewLook is not installed, you may want to supply your own 3D icons for radio buttons etc. To tell whether 3D windows are in use, you can read the system variable *NewLook$Options*. If it does not exist, or if it does not contain within its string the character sequence "3DW", then the machine is not using 3D windows, and you can take the required action accordingly. The following lines of code will set *newlook%* to TRUE if 3D windows are in force:

```
DIM buffer% 63
SYS "XOS_ReadVarVal","NewLook$Options",b
uffer%,64,0,TO ,,len%
buffer%?len%=13
newlook%=(INSTR($buffer%,"3DW")>0)
```

ARRAY OPERATIONS IN BASIC VI

G.H.Toulmin

The following program using array operators will run correctly under *Basic V*, but will cause a crash in *Basic VI*.

```
10 DIM x(1)
20 x()=1,2
30 x()=x()/10
40 P.x(0),x(1)
50 STOP
```

Acorn was able to confirm that this is indeed a bug affecting *only* the division of arrays, and suggested the following simple fix:

```
30 x()=x()*(1/10)
```

Interestingly, the following statement works correctly:

```
30 x()=10/x()
```

ENUMERATING DESKTOP WINDOWS

Nathan Micholey

It is a simple matter to find the handles of all windows on the Desktop by calling the SWI *Wimp_GetWindowState* with handle -2. This will get the state of the icon bar. From this, you can find the handle of the window in front which is held at R1+28. This can in turn be used with *Wimp_GetWindowState* to find out that particular window's state. Repeat this until you get a handle of -1, meaning that you have just read the top window.

PRINTING BASIC PROGRAMS FROM EDIT

Pieter Schmidt

When editing Basic programs using *Edit*, it is impossible to print a program. If you try, nothing happens. There is a quick way round the problem. Use the *Set type* option in the *Misc* submenu of Edit to set the file type to *Text*. The file can now be printed. Remember to set the filetype back to Basic before you save the program.

SWITCHING FONTS ON AND OFF

Richard Mawhood

Here is a convenient method for adding and removing groups of fonts to the list of fonts currently available on a system. Firstly, delete the *!Fonts.!Boot* file, making sure you have a copy in case of disaster, and replace it with a file of type Obey containing the following lines:

```
If "<Fonts1>"<>"On" Then Iconsprites<Obey$
Dir>.!On Else Iconsprites <Obey$Dir>.!Off
If "<Fonts1>"<>"On" Then Set Fonts1 On Els
e Set Fonts1 Off
Stamp <Obey$Dir>.^.!Fonts
RMEnsure FontManager 2.89 Obey
If "<Fonts1>"="On" Then FontInstall <Obey$
Dir>. Else FontRemove <Obey$Dir>.
```

Each time you modify a !Fonts directory, you should include a different numbered version of *Fonts1*, eg. *Fonts2*, *Fonts3*... There are five occurrences, all of which will need changing. Now, rename the *!Sprites* file to *!On*, and make a copy of *!On*, called *!Off*. Load *!Off* in to Paint and change the light blue parts of the sprites to colour 2, the dark blue line to colour 3, and the letter F to colour 4. If you like, you can make similar versions of the *!Sprites22* and *!Sprites23* files. The fonts can now be added to, or removed from, the list of fonts available.

CONVERTING BASIC DATA FILES TO TEXT

Rolf Herschel

Most applications nowadays that process information can load standard text files. However, many older BBC micro programs stored textual data as strings using the PRINT# statement. Unfortunately, these cannot be read as text files, since the stored format is completely different. Nevertheless, it is very simple to convert an older file to a text file. If it consists only of text strings, the following program will convert the file *Oldfile* into a text file *Newfile*, with a new line after each string:

```
in%=OPENIN"Oldfile"
out%=OPENOUT"Newfile"
REPEAT
 INPUT#in%,a$
 BPUT#out%,a$
UNTIL EOF#in%
CLOSE#in%:CLOSE#out%
OSCLI("SetType Newfile FFF")
```

If on the other hand the old file contains a mixture of strings, integer and real variables, the following program will convert everything to text file format:

```
in%=OPENIN"Oldfile"
out%=OPENOUT"Newfile"
REPEAT
 a%=BGET#in%:PTR#in%=PTR#in%-1
 CASE a% OF
  WHEN 0:INPUT#in%,a$
  WHEN 64:INPUT#in%,x%
  a$=STR$x%
  OTHERWISE:INPUT#in%,x
  a$=STR$x
 ENDCASE
 BPUT#out%,a$
UNTIL EOF#in%
CLOSE#in%:CLOSE#out%
OSCLI("SetType Newfile FFF")
```

FINDING THE TITLE OF A WINDOW

Nathan Micholey

The following Basic procedure will find the title of any window, even if it does not belong to the current task.

```
DEF FNget_window_name(d%,t%)
LOCAL l%,a$
IF d%!56 AND (1<<8) THEN
  SYS "Wimp_TransferBlock",t%,d%!72,
our_task%,block%,256
  d%=block%:l%=254
ELSE
  d%+=72:l%=12
ENDIF
WHILE ?d%>=ASC(" ") AND l%>=0
  a$+=CHR$(?d%):d%+=1:l%-=1
ENDWHILE
=a$
```

d% points to a block in to which the window definition has been stored using *Wimp_GetWindowInfo*. *t%* is the handle of the task owning that window, which can be found out with *Wimp_SendMessage*. The function returns the window title as a string. *block%* is a global variable that points to an area of memory that is *DIM*ensioned to at least 256 bytes at program start up time and *our_task%* is the calling task's task handle as returned by *Wimp_Initialise*.

PROBLEMS WITH MODIFYING TEMPLATE FILES

Alan Wrigley

If you use FormEd to modify template files for applications you have not written yourself, beware - there are several reasons the application may fail to work afterwards. Firstly, there can be occasions where an icon number in a template is missing (for example, icon number 7 may have been deleted, leaving numbers 8 and above intact). If you then modify any icon above 7 in any way, FormEd will renumber it as 7. If the application subsequently tries to access the icon by its old number, it will not find it.

Secondly, if you alter a validation stringor indirected title bar string and make it longer, there is no guarantee that the program that owns the template will allocate enough indirected workspace for it. If the allocation is only just sufficient to cover the indirected strings that the programmer designed, the program will fail when run.

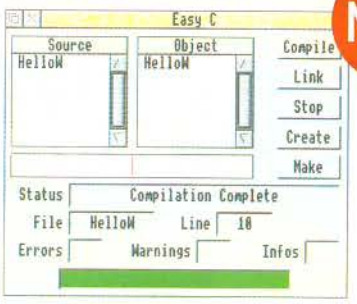
Thirdly, if you modify a template, FormEd may shuffle the order of the templates around in the file. Some programs expect to find particular templates in specific places in the file, and once again problems will occur if you inadvertently alter their positions.

The moral of the story is simple: *always* keep a copy of the original template file before you carry out any modifications at all, however small. You can then always restore them to their original state if things go wrong.

software showcase

NEW

Easy C



Easy C is a full development system designed for programmers wishing to learn or develop their skills in C.

Easy C uses a WIMP front-end to drive the compiler and linker, so no complicated command-line sequences need to be learnt. C programs may be compiled, linked and run using one single mouse click. It is ideal for beginners, but the full specification ANSI compiler (not validated) allows it to handle very substantial programs.

For more advanced programmers, Easy C contains an integrated Make facility and ARM assembler.

Easy C is supplied with a comprehensive user guide including a C language tutorial for beginners and a full description of all ANSI and RISC OS library functions provided.

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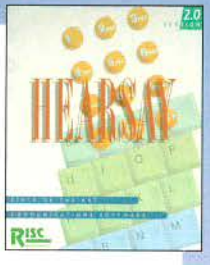
- Facility to create and maintain libraries
- Integrates with editors using 'Throwback'
- FreeWare WIMP library DeskLib supplied

Easy C £49

Hearsay



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WRITE -- BACK

HOW MANY FACES IN A FONT?

With the increasing proliferation of suppliers of fonts for the Archimedes, I feel that advertisers, reviewers and writers should be asked to specify whether they are referring to fonts or font families. At the Acorn World '93 show, I asked at one stand whether they were counting a typeface supplied in medium, bold, Roman and italic as one font or four, and the demonstrator was unable to answer the question. It became apparent that what I considered to be one typeface, supplied in two weights, each in two styles, was, by their reckoning, four fonts.

The advertisement for RISC User's own font discs (RISC User 7:1 page 18) makes it quite clear that ten outline fonts may provide 10, 28 or 31 different faces, and EFF also specify whether a typeface is a single font or in multiple weights and styles. Skyfall advertise "250 fonts for £30" and says that they are supplied "with Bold and Italic styles". This is true of many but not all of the typefaces, although the packages are so cheap that this is (fairly) acceptable. Perhaps the use of "typeface" to indicate the single outline font, or font family and "fonts" to indicate a variety of weights and styles, would assist the unwary purchaser to distinguish between the various packages now offered.

Anne Nichols

MORE ON HIGH DENSITY DISCS

*With regards to the problem encountered by Malc Gambrill (**Write-Back** RISC User 7:3), high density disc interfaces are still being made by The Serial Port, Burcott Manor, Wells, Somerset BA5 1NH, tel. 0749 670058. Also, some older software does need to be updated - usually a letter or phone call to the relevant software house is sufficient.*

Ralph Sillett

UPGRADING RISC OS 3.00 TO 3.10

Acorn's announcement last year of its intention to withdraw the special update route from RISC OS 3.00 to 3.10 for owners of the early A5000s prompted me finally to decide whether to upgrade or not. The disadvantages of upgrading are a) the cost, b) the risk of damage to the hardware, c) the new software may have more bugs than it solves and d) software carries no warranty and so no come-back if it does not do what is claimed. I have therefore researched the literature for specific advantages of upgrading to 3.10.

As far as I can establish RISC OS 3.10 offers just a few obscure bug fixes and some minor improvements. Other bugs in !Printers have not been cured. Most of my problems with RISC OS relate to the use of !Printers, and there are three problems which I find a particular nuisance which I suspect are still present in RISC OS 3.10.

On balance, I think the answer to my initial question is "No". I have therefore decided not to upgrade to 3.10 but wait for a version with the bugs removed. If there are any other improvements that you know of which could influence my decision, then please let me know.

Mike Cumpstey

While A5000 users in particular may feel that there is little reason to upgrade to RISC OS 3.10, there are a number of points to be considered in making a decision. Firstly, Acorn will not continue to support RISC OS 3.00, but only 3.10 (until it in turn is replaced at some future date). There are also differences between 3.00 and 3.10 so software purchased from now on may not work fully under RISC OS 3.00. For example, the validation command for 3D icons was changed from B to R, so software correctly written under RISC OS 3.10 which uses 3D icons will not display them in this form under RISC OS 3.00. Acorn's NewLook released last year will only work with RISC OS 3.10.

Software development is somewhat of an evolutionary process. In general it is worthwhile keeping up to date with any software as new versions are released, particularly when it is an operating system we are talking about, otherwise the user becomes increasingly isolated, unable to benefit fully from later developments.

There is a final but quite separate point. Initially Acorn provided an upgrade for A5000

users from 3.00 to 3.10 at a price of £19, while those with RISC OS 2 were charged £49. Many RISC OS 2 users (according to Acorn) bought the cheaper A5000 upgrade (the same ROMs but no manuals) to the point where Acorn claimed that it had sold more A5000 upgrades than it had sold A5000s. Acorn therefore discontinued the £19 A5000 upgrade. Last autumn Acorn also announced that the special £49 price of the standard upgrade was reverting to a standard price of £85.

Now the number of A5000 users with RISC OS 3.00 is no doubt relatively small, but we believe that those owners who have not yet upgraded are being unreasonably penalized by Acorn, and would ask Acorn to reconsider its policy on such upgrades. After all, it surely can't be that difficult to ensure that A5000 upgrades are sold only to A5000 users!

PIN BOARD

A WANING STAR?

The "Printer on Line" procedure in RISC User 6:4 page 43 works well with a variety of printers and machines. The only occasion that it is unreliable is with an A5000 and Star LC24-10 printer combination when the printer is switched ***off*** *(i.e. not even on-line). The results are erratic and it leads to the machine hanging. What is so different about a Star?*

Keith Vernon

Can any other readers test out this combination of machine and printer?

CALLING ALL RF ENTHUSIASTS

Steve Hunt, one of our contributors, has developed a number of applications which will be of interest to both professional and amateur RF design engineers. They include a filter designer, a receiver noise figure analysis tool, an inductance 'ready reckoner', and comprehensive Smith Chart design aid. For more details, contact Steve at 21 Green Street, Milton Malsor, Northampton NN7 3AT, tel. 0604 858090 (after 7pm).

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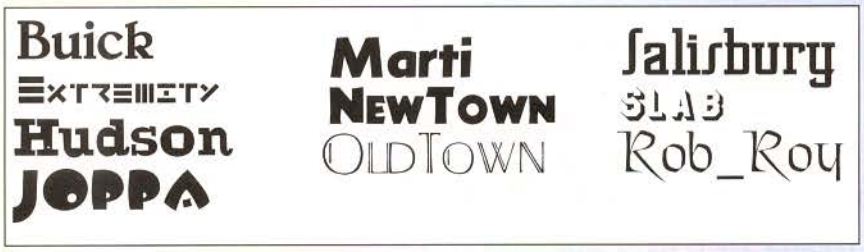
RISC USER FONTS DISC 1



RISC USER FONTS DISC 2

RISC USER FONTS DISC 3

FONTS DISC 1

Font disc 1 also includes Acorn's Outline Font Manager plus the following applications:

ShowFonts - displays or prints outline fonts

DrawFont - converts outline fonts for use in Draw

FontSwap - allows font substitution

FontCtrl - allows easy tuning of font configuration

FontRead - downloads font definitions to PostScript

FONTS DISC 2
FONTS DISC 3

Both Fonts Discs 2 and 3 contain the following additional applications:

FontSpace - allows change of character spacing

Kerner - allows you to kern text (RISC OS 3)

ShowFonts - displays or prints outline fonts for reference

Ligature - allows easy incorporation of ligatures, smart quotes and dashes in your text (RISC OS 3 only)

PFD1a	**Fonts Disc 1**	**8.47 ex. VAT**
PFD2a	**Fonts Disc 2**	**8.47 ex. VAT**
PFD3a	**Fonts Disc 3**	**8.47 ex. VAT**

Please add £ 1.00 p&p. (Prices quoted are members prices)

RISC developments

RISC Developments Limited. 117 Hatfield Road, St Albans, Herts, AL1 4JS Tel. 0727 843600 Fax. 0727 860263

SpyMaster

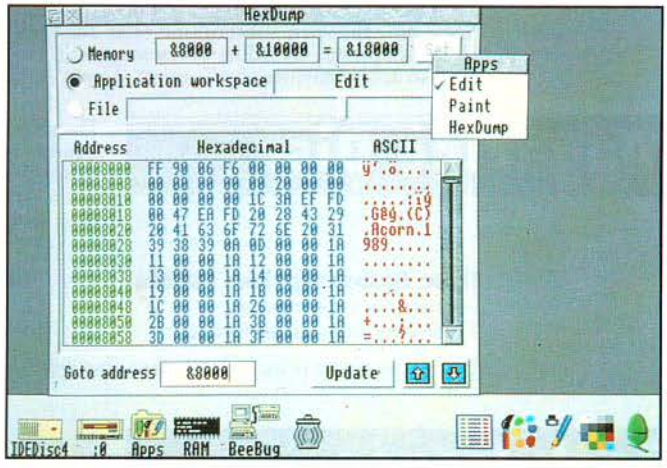
by Graham Crow

Have you ever had one of those days when you just could not find an elusive bug in a Desktop program? And did it occur to you that that bug might be easier to find if you could somehow peek in to that application's workspace to find out exactly what it was up to? Now you can, thanks to this handy utility designed by Graham Crow.

SpyMaster is an invaluable programmers' utility which allows you to do just that. You can select a task from a list of those that are running and examine the entire memory space in a scrollable window displaying the address, hexadecimal value and ASCII equivalent of each byte. You can print the memory dump out, or save it to disc as a text file. Printouts and text files can be saved in any of three formats, with either 8, 16 or 24 bytes per line.

As if all this were not enough, you can use *SpyMaster* to examine the contents of and information about files, as well as any area of the computer's memory.

With this program, you will have no problems tracking down those troublesome errors, to use that awful recurring cliche, "you'll wonder how you ever managed without it".



A typical dump from Spymaster

Get Triangulated

by Geoff Scott

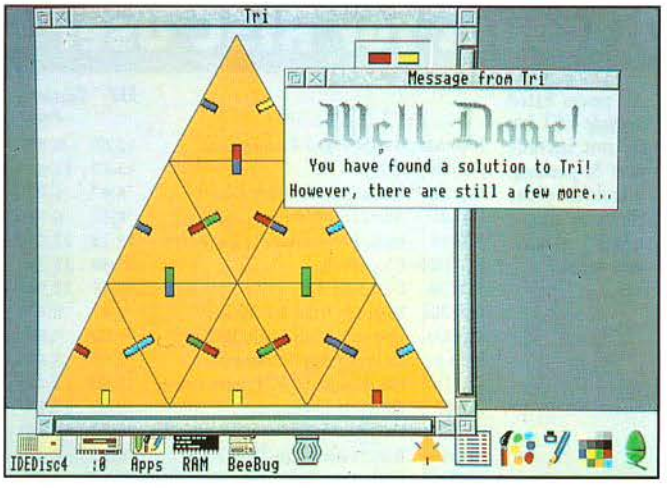
Tri - the game of triangles - is an entertaining Desktop game to help you while away the tedious hours when inspiration fails to strike. It is an interesting and challenging version of the infamous sliding block puzzles like the *Puzzle* program on the RISC OS application discs.

You will find that *Tri* is an enjoyable way to spend your time and you will undoubtedly return to it again and again, anxious to find every winning permutation. If you really do have to leave it, there is an option to save the game, so you can leave the puzzle and come back to the same game position another day.

Your mission is this: You must rearrange the triangles by swapping them around and rotating them in position until you have matched the coloured pegs on each side of all the triangles to appropriately coloured pegs on all the neighbouring triangles. The pegs must be matched according to the key at the top left of the triangle window. Yellow pegs must meet red pegs, light green must touch dark green and cyan must converge with navy.

Once you have solved the puzzle, you can choose New game from the menu and start again.

For reasons of space, both these applications appear on this month's magazine disc.



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The programs from each issue of RISC User, together with a number of substantial additional items, are included on a monthly 3.5" disc. This is available to order, or you may take out a subscription to ensure that the disc arrives at the same time as the magazine.

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Classifieds

Members may advertise their unwanted computer hardware and software through the personal ads column free of charge. However, we are unable to guarantee in which issue your advertisement will appear. We also accept non-members' ads at the rate of 40p per word.

● A4, 4Mb, 60Mb hard drive with PC Emulator, 6 months old (user is a teacher whose new school has no Acorn compatible equipment) £1,100. Tel. Dunfermline 0383 739629.

● A3010, 4Mb RAM £395, HCCS interface with 80Mb internal hard drive £150, HiVison Colour Digitiser £75, Atomwide Parallel SCSI interface £35, Cambridge Computers Z88 with 512k RAM + 128k EPROM and PCLink II £125. Tel. 061-973 8063 eves.

● PC Emulator v1.82 and DR DOS 6.0 (needs RISC OS or later) £100. Tel. 0268 782386 after 4pm.

● Hard disc Companion £20, serial port, Investigator 2 £10, Games: Conqueror, Nevryon, Superior Golf, Zarch - £6 each or all four games for £20, Computer Concepts ROMs (for CC ROM/RAM podule), Interchart £10, Intersheet £15, Spellmaster £20. Tel. Surrey 0737 832159 eves.

● WANTED: RISC User Vol.1 Iss.4, Vol. 1 Iss.5, Vol.3 Iss.3 and Vol.4 Iss.1. Please send details of cost including postage to; Webb, 64 La Gratitude, Protea Road, 7550, South Africa.

● Archimedes software: Easiword £25, Grievous Bodily Arm £10, Blowpipe £10, Interdictor II £12, Enter the Realm £10, Lemmings £10, SWIV £7.95. All software in excellent condition in original packaging with manuals etc. also Squirrel v1.21 manual £4 + p&p (upgraded to v2). All sensible offers considered. all prices are exclusive of p&p. Tel. Devon 0823 680111.

● A440/1 4Mb RAM and 47Mb hard disc, with ARM3 and RISC OS 3.1, no monitor £675. Fireworkz new and unregistered £105, DeskEdit 2 latest version £15. Tel. Bristol 0272 736237.

● 40Mb Watford ST506 hard drive including controller card £40, Watford 4 podule back plane £7, Brainsoft multiple podule half width podule plus software (RS232 serial port video digitiser sound sampler) £30 complete with camera £20, Acorn full with Acorn I/O podule (Analogue /user/1MHz bus) £20, Tablemate £5, Arxe MultiFs £4, RISC Developments Desktop Thesaurus £10. Northants 0327 79046.

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● Acorn Advance, unwanted, still sealed as new £80. Tel. Herts 081-950 5904 eves.

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● WANTED: Embriodary machine for linking to a computer such as the "Poem 500 CNC", also wanted monitor such as AKF30. Tel. Leeds 0532 755276.

● WANTED: Any Epson printer, any reasonable price paid. Tel. Suffolk 0502 725016.

● Computer Concepts Scan-Light junior £75. Tel. 0484 654186.

● WANTED: Acorn Computing Magazine (+discs if possible), March 1993 issue i.e. Vol. 11 No. 1. Tel. North Yorkshire 0751 472285.

● SJ MDFS fileserver for Econet with 20Mb hard disc and matching tapestreamer and 35Mb tapes £500. Continued manufacturer's support still available. Tel. Bath 0225 464313.

● Acorn I/O podule for A300 or A400 series £50 o.n.o. Tel. Shropshire 0568 780355 after 6pm.

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● Archimedes 310, 4Mb, ARM3, IDE FS 170Mb + 40Mb, Replay DIY, RISC OS 3.1 £850 o.n.o. Tel. 0727 840303 (ask for Paul extn 236).

● A5000 LC 2Mb, 40Mb hard disc, M/Scan monitor, PC soft £875, also M128+ colour monitor + 3.5" drive + Epson FX80 printer £350 (will separate). Tel. Birmingham 021-455 0795.

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PRO : Artisan 2

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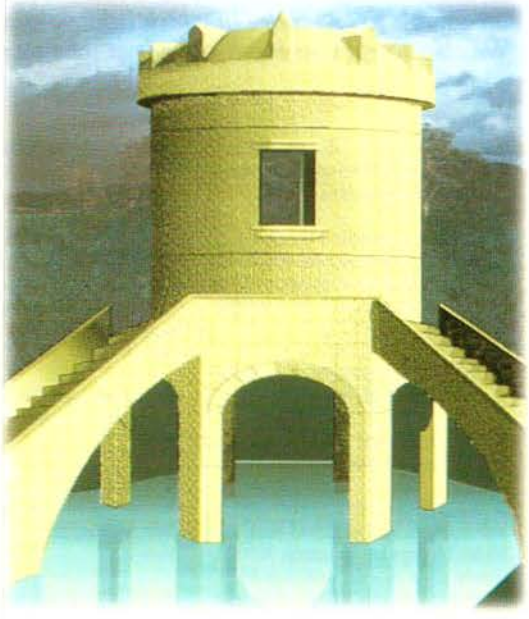

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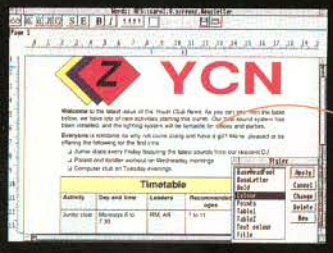

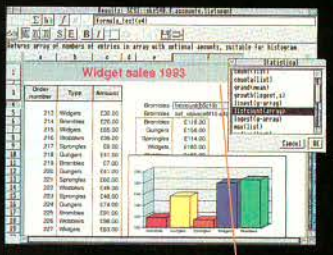

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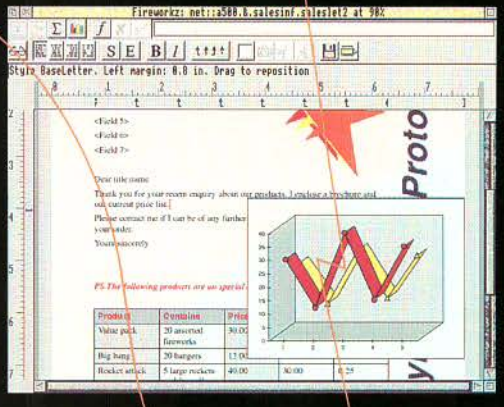

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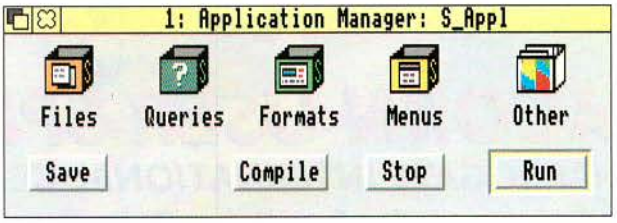

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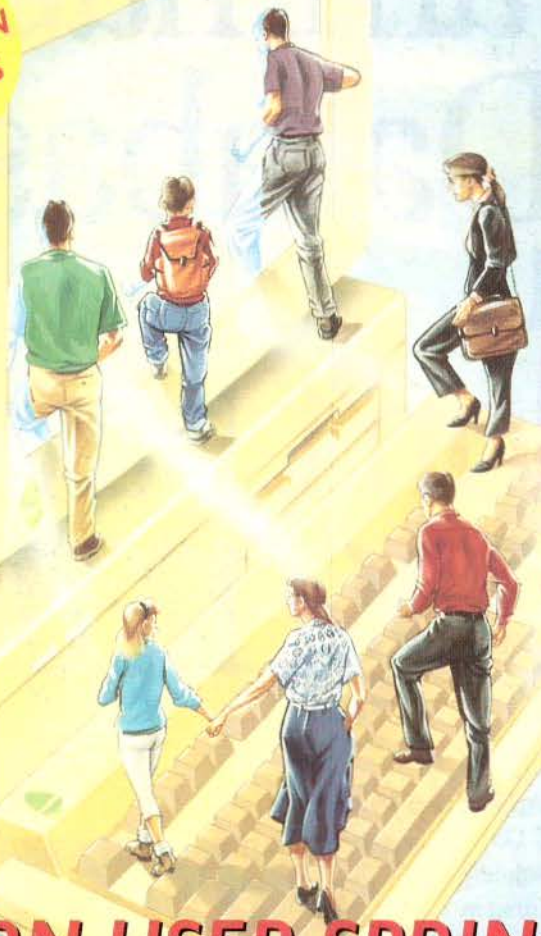

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